Cover Certification Report

Resources for Responsible Site Management, Inc.,
as Trustee for the Industri-Plex Site Custodial Trust
Tax Map 5-1-1
Woburn, Massachusetts 01801

September 30, 2008

Prepared for:

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TABLE OF CONTENTS

TABLE OF CONTENTS

(Continued)

TABLES

APPENDICES

ATTACHMENTS

1.0 INTRODUCTION

The Industri-Plex Site Remedial Trust (Remedial Trust) is required by the Consent Decree entered on April 24, 1989 by the United States District Court for the District of Massachusetts in the matter styled United States v. Stauffer Chemical Company et al., Civil Action No. 89-0195-MC, and Commonwealth of Massachusetts v. Stauffer Chemical Company et al., Civil Action No. 89-0196-MC, and recorded at the Middlesex South Registry of Deeds in Book 19837, Page 476 (Consent Decree) to fund and administer the obligations of the Consent Decree. At the request of the Remedial Trust, Roux Associates, Inc. (Roux Associates) has prepared this property-specific Final Cover Certification Report (Cover Certification Report) in compliance with the Consent Decree requirements. This Cover Certification Report documents completion of a portion of the Remedial Action for soil, sediments, and air at the Industri-Plex Superfund Site (Industri-Plex Site), Woburn, Massachusetts. Site wide completion of the Remedial Action for soil, sediments, and air is documented in the Master Cover Certification Report for the Industri-Plex Superfund Site. The specific property addressed in this report is owned by Resources for Responsible Site Management, Inc., as Trustee for the Industri-Plex Site Custodial Trust, and located along New Boston Street Rear in Woburn, Massachusetts (Tax Maps 5-1-1). Within the report text herein, Resources for Responsible Site Management, Inc., as Trustee for the Industri-Plex Site Custodial Trust, is referred to as RRSM. Construction of the Remedial Action for soil, sediment, and air was completed on June 28, 1996. Changes to the cover at this property may have been made since that date. Approved changes to the cover are documented in the Administrative Record for the Industri-Plex Site.

In accordance with the Consent Decree and the Contract Documents for the Remedial Action, a certification report must be prepared by a registered professional engineer certifying that all remedial activities have been completed in full satisfaction of the requirements of the Consent Decree. As defined by EPA, (Federal Register, July 26, 1982) certification does not constitute a guarantee or warranty, but a “rendering of a professional opinion concerning compliance with a requirement of the regulations by a qualified professional in the field.”

1.1 Site Description and History

The Industri-Plex Site is a 245 (+/-) acre area, located about 10 miles northwest of Boston, Massachusetts in the north part of Woburn, within the Aberjona River Valley. The Site is bounded on the east side by Interstate 93, and Interstate 95/State Route 128 is located about one half mile south of the Site. The Boston Edison Power Company right-of-way No. 9 is the southwest boundary of the Site. The Massachusetts Bay Transportation Authority (MBTA) railway transects roughly the western third of the Site in a northwest-southeast direction. The Industri-Plex Site was surveyed by SAIC Engineering, Inc. and Liu Aerial Surveys in 1990 and 1991.

Since the mid-1800s, the Industri-Plex Site has been used primarily by companies producing chemicals for textile, leather, and paper. Chemical manufacturing operations occurred at the Site from 1853 to 1931, producing sulfuric acid and related chemicals, arsenic insecticides, acetic acid, dry colors, phenol, benzene, picric acid, toluene and trinitrotoluene (TNT). By 1929, the Merrimac Chemical Company, which occupied the Industri-Plex Site, had become one of the leading producers of insecticides and other chemicals in the United States. The Merrimac Chemical Company plant included 90 buildings on 417 acres, many of which were within the current Industri-Plex Site. Early operations included disposal of wastes in pits or low-lying wetlands. Liquid wastes were discharged into streams and later sewers. As a result, heavy metal wastes from the chemical operations contaminated Site soils and wetland sediments.

From 1934 to 1969, the property was used by several companies to manufacture glues and gelatins from animal hides. Raw, salted or limed hides, hide fleshings, or chrome tanned leather scraps from cattle, hogs, sheep or other animals were used to manufacture glue by extracting a protein called collagen from animal tissues or bones. Animal hide waste products from the rendering process were disposed of in mounds or hide piles on-Site. A developer purchased the plant property in the early 1970s intending to build a complex of industrial buildings (hence Industri-Plex) and began grading operations. During hide pile excavation, noxious gases and odors, attributable to the decomposing hide wastes, were released. The distinctive odor became known as the “Woburn odor.” Complaints from local residents and encroachment on wetland areas stopped further development of the Site.

In 1981, the United States Environmental Protection Agency (EPA) proposed the Industri-Plex Site for the National Priorities List (NPL), also known as Superfund. The Industri-Plex Site was finalized on the NPL in 1983. In May 1982, EPA and the Massachusetts Department of Environmental Quality Engineering [DEQE – currently known as the Massachusetts Department of Environmental Protection (MassDEP)] entered into a Consent Order with Stauffer Chemical Company to undertake a Remedial Investigation/Feasibility Study (RI/FS). In April 1985, Phase II of the RI/FS was completed. The Remedial Investigation identified arsenic, lead, and chromium in Site soils and wetland sediments as well as impacts to the ground water and odors due to hydrogen sulfide and methyl mercaptans emitted from the hide piles. Abandoned buildings and waste lagoons were also present on the Site. Based on the RI/FS, EPA, along with MassDEP, established a Record of Decision (ROD) in 1986 for the first phase of the cleanup at the Industri-Plex Site (known as Operable Unit 1, OU-1), which included a protective cover over more than 100 acres of soil contaminated with heavy metals and animal wastes, a gas collection and treatment system, institutional controls, an interim groundwater remedy, as well as further investigations of Site-related contamination at and downstream of the Site to support a future second phase (known as Operable Unit 2, OU-2). The location of the protective cover is illustrated in Attachment 1, which includes an impermeable cover for the gas collection and treatment system situated at what is known as the East Hide Pile.

Further details of the Industri-Plex Site history can be found in the 1986 Record of Decision.

In a 1989 Consent Decree between EPA, MassDEP and the current and former property owners, two Trusts were established which set in motion the remediation and reuse of the Industri-Plex Site. The Remedial Trust was formed to prepare and implement the remedy according to the ROD. The Industri-Plex Site Custodial Trust (Custodial Trust) was formed to hold, manage, and sell a portion of the Site.

Golder Associates, Inc. (Golder) was selected in 1989 by the Remedial Trust to design the remediation for the Industri-Plex Site. The remedial design included pre-design investigations of the soils, wetlands, air, and groundwater.

The pre-design investigations included sampling analysis and studies to determine the extent of contamination and, in accordance with the Consent Decree, to evaluate cover types. Designs were needed to prepare the ground surface for cover. The remedial design included:

1. Plans for the demolition or decommissioning of abandoned buildings, railroad tracks, underground utilities, a personnel tunnel, and over 120 existing observation wells and piezometers used during the preliminary investigation.
2. Plans for controlling odors, fugitive dusts, and surface water runoff during construction to prevent off-Site impacts.
3. Evaluation of, and considerations for the future stability of, the hide pile slopes.
4. Plans for collecting and treating waste gases in a Thermal Oxidation Unit.
5. Plans for dredging, remediating, and revitalizing streams and wetlands.

The remedial design for contaminated soils and air included both permeable (soil and geotextile) and impermeable (soil and geomembrane) covers. A permeable cover system was designed for 60 acres of upland soils and three hide piles (known as the West, East-Central and South Hide Piles) contaminated with high concentrations of heavy metals and decomposing organic wastes. The permeable cover included a geotextile base to maintain separation between contaminated soils and clean cover material, a clean grading fill, and topsoil with vegetation. An impermeable cover was designed for a fourth hide pile (known as the East Hide Pile) which was approximately four acres in size and an active odor source. The impermeable cover included a high permeability gas collection layer, geomembrane, cover grading fill, topsoil, and vegetation. An active gas collection system was designed to collect gases trapped by the impermeable cover and convey the gases to a Thermal Oxidation Unit for treatment. The permeable cover system for the Site was further divided into two categories: “Engineered Cover”; and “Equivalent Cover”. The Engineered Cover was designed and constructed by the Industri-Plex Site Remedial Trust as part of the response activities at the Site to prevent exposure to contaminated soil, and may be comprised of one or more of the following materials: geotextile, geomembrane, soil, gravel, bituminous concrete and/or asphalt. The Equivalent Cover represents existing structures serving as an adequate permeable cover. Equivalent Cover, although not designed as part of the Engineered Cover, functions to prevent exposure to contaminated soil, and may be comprised of one or more of the following ground covering structures or features, or portions of such structures or features: buildings; foundations; slabs; paved driveways, walkways, parking lots

and/or roads; or other such ground covering structures or features. The location of Engineered and Equivalent Covers are illustrated in the Record Drawings.

Site remediation also required capping approximately five acres of contaminated streams and wetland sediment. Approximately seven acres of wetland enhancement, restoration, and creation were designed to compensate for wetland losses. Normandeau Associates, Inc. of Bedford, New Hampshire, was a key designer of the wetland mitigation plans.

A revised final (100%) Design Report was issued on May 8, 1992. Approval for the 100% Design Report was issued by EPA in consultation with the MassDEP on May 18, 1992. A Remedial Action Work Plan for Soil, Sediment and Air Remedy was issued on June 22, 1994, and approved by EPA, in consultation with MassDEP, on July 11, 1994.

1.2 Scope of the Remedial Action

The Remedial Action (RA) implemented the Remedial Design prepared by Golder and distributed for bidding in April 1992. The RA included covering metal-contaminated soils encountered over an approximately 100-acre portion of the 245-acre Site, a portion of which this property represents, is shown on Sheet C-29 of Attachment 1. This certification addresses the remedial action performed on the RRSM property (5-1-1). The RRSM property is divided between the East Hide Pile, West Hide Pile, wetlands 1C and undeveloped properties. The remedial action on the West Hide Pile portion of this property included a designed permeable cover of clean soil, riprap, or gravel overlying a geotextile layer that was placed directly on prepared existing ground and fill soil. The remedial action on the East Hide Pile portion of this property included a designed permeable cover of clean soil, riprap, or gravel overlying a geotextile layer that was placed directly on prepared existing ground, designed impermeable cover of clean aggregate overlying a geotextile and 60-mil HDPE geomembrane layers that were placed directly on prepared existing ground or fill soil, and a system of gas collection piping and vaults connected to a thermal oxidizer unit. The remedial actions on the Wetlands 1C and undeveloped properties included a designed permeable cover of clean soil, riprap, or gravel overlying a geotextile layer that was placed directly on prepared existing ground, fill soil, and wetland sediments.

This certification report does not include a section of RRSM (Tax Map 5-1-1), which comprises a portion of the Commerce Way Extension road, located east of Chestnut Hill Realty Trust (Tax Map 10-1-11) and west of City of Woburn (Tax Map 10-1-17). That section of RRSM was certified as part of the Regional Transportation Center (RTC) cover certification prepared by Golder, and approved by EPA on April 29, 1998.

Work conducted between 1992 and December 1997 is addressed in this report.

This report includes the following information as it pertains to the remedial action performed on the RRSM Property:

- Relevant portions of the Final 100% Design Report (**Appendix A**);
- The submittal log (**Appendix B**);
- Modifications of specifications and plans (**Appendix C**);
- Results of Site air and surface water monitoring (**Appendix D**);
- Decommissioning of wells, piezometers, gas vents, and unidentified wells ("UIDs") (**Appendix E**);
- Results of soil conformance and in-place material testing during the Remedial Action (**Appendix F**);
- Results of geosynthetics conformance material testing (**Appendix H**);
- Observation and testing associated with the installation of the impermeable cover (**Appendix H**);
- Observations of subgrade preparation, and geosynthetic installation (**Appendix I**);
- Created Wetland Cover System and Final Vegetation Establishment and Soil Stabilization Plans (**Appendix J**);
- Details of the Thermal Oxidation Unit (**Appendix K**); and
- Review of lines and grade control.

1.3 Report Format

This property-specific Cover Certification Report was derived from the Master Cover Certification Report documenting the completion of the soil, sediment and air remedies at the Site (excluding MassPort Authority property documented in the April 1998 RTC Cover Certification Report). Other property-specific Cover Certification Reports will be produced for the remaining properties at the Site. This property-specific Cover Certification Report presents a generic description of all work performed to complete the soil, sediment and air remedies, some of which are applicable to this property. For those portions/sections which are not relevant to this property-specific Cover Certification Report, those sections have be identified as "[Not Applicable to This Property]" and left vacant. The Master Cover Certification Report contains property-specific details and record drawings for 31 Tax Map lots at the Site including additional general and Woburn Roads/Right of Way information. Please reference the Master Cover Certification Report for this additional Site-wide information

2.0 PROJECT PARTICIPANTS

In July of 1989 Golder was retained by the Remedial Trust to prepare the Remedial Design for the Site. The Consent Decree included the Remedial Design/Remedial Action Plan (RDAP). The RDAP required the preparation of Pre-Design Investigations and a Remedial Design. The design was executed in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended and re-authorized. From 1990 to 1992 Golder prepared Preliminary, Intermediate, Pre-Final and Final Design Reports in conformance with the RDAP.

The Remedial Trust entered into an agreement with Chemical Waste Management, Inc. Remediation Services Group of Princeton, New Jersey, (CWM, also Contractor) to perform the Remedial Action in accordance with the RDAP and the Remedial Design plans and specifications. The name of the Contractor changed January 1, 1993 when CWM was acquired by Rust Remedial Services Inc. (Rust), then again in May of 1995 when OHM acquired Rust. The name Chemical Waste Management was retained as the legal name of the Contractor throughout the period covered by this report.

Several subcontractors assisted the Contractor with specific tasks during the remedial work. A list of the subcontractors and the services they provided is presented below:

- Rust Environment and Infrastructure, formerly SEC Donohue Inc., of Burlington, Massachusetts provided engineering support;
- Earth Tech Inc. (Earth Tech), formerly HMM Associates Inc., of Concord, Massachusetts provided surveying services from 1992 to 1993 and Meridian Land Services Inc. (Meridian) of Milford, New Hampshire provided surveying services from 1993 to 2001. Both surveying companies collected field documentation that would be used to establish the as-built drawings for this report;
- Eastmont Environmental Inc. of Walpole, Massachusetts conducted perimeter air monitoring;
- Beattie Enterprises of Lancaster, New Hampshire assisted with clearing and grubbing the Site;

- Maher Environmental Services (Maher), formerly D.L. Maher Company, of Reading, Massachusetts decommissioned the wells and piezometers;

- Barbella Environmental Technology Inc. of Whitehouse, New Jersey assisted in the hide pile remediation;

- National Seal Company of Galesburg, Illinois installed the 60 mil high density polyethylene (HDPE) geomembrane;

- NAO, Inc., of Philadelphia, Pennsylvania designed and provided the thermal oxidizer unit for the East Hide Pile,

- Datatest Industries, Inc. of Hillsborough, New Jersey designed and installed the Continuous Emissions Monitoring System for the thermal oxidizer at the East Hide Pile;

- Toxikon Laboratories, of Woburn, Massachusetts, and 21st Century Environmental Inc. of Bridgeport, New Jersey, assisted the Contractor with water and soil analytical testing; and,

- Reliable Fence Company of Woburn, Massachusetts installed chain link fence on the Site.

In accordance with the Consent Decree, EPA contracted with Halliburton NUS (HNUS) of Wilmington, Massachusetts to provide technical oversight. Representatives of EPA and the (MassDEP) met with the Remedial Trust monthly (approximately) throughout the Remedial Action to oversee the performance of the work. Minutes of the meetings were recorded but are not included in this report.

Golder provided engineering quality assurance (QA) for the Remedial Action from September 1992 through December 1995. QA included examining and testing materials and procedures to verify and assure the Remedial Trust that the construction conformed to the specifications and drawings. The Remedial Trust directed Golder to perform a geophysical investigation during May 1993. Golder Construction Services Inc. (Golder Construction) provided on-Site construction management services for the Remedial Trust from March 1995 through December 1995.

The Remedial Trust contracted with Professional Service Industries, Inc. (PSI) of Canton, Massachusetts to perform soil moisture/density testing of compacted soils, soil laboratory testing, and asphalt testing. PSI also performed on-Site QA testing from August 1993 through December 1995.

During 1995, the Remedial Trust contracted with de maximis, inc. to be the Site manager for the Remedial Trust and to coordinate the work conducted by Golder, CWM, and other contractors. In 1998, the Site manager role was assumed by Maverick Construction Management Services, Inc. (Maverick). Following remedial construction activities, the Remedial Trust contracted directly with Maverick to coordinate the documentation of as-built cover conditions, to manage construction activities necessary to bring the cover into compliance with the 100% Design and to prepare a Draft Cover Certification Report. In 2007, the Remedial Trust contracted with Roux Associates to complete the certification of the cover, including the completion of the draft and final Cover Certification Report.

3.0 CONSTRUCTION DOCUMENTS

RD/RA Work performed for the Remedial Trust was completed according to the documents, plans, and specifications described in Sections 3.1 through 3.4.

3.1 Consent Decree

The Consent Decree (EPA, 1989) entered into between the Plaintiffs [i.e., EPA and the MassDEP (Agencies)] and the Settlers defined the work that was to be undertaken at the Site. This definition is within the Consent Decree as well as the RDAP. The Consent Decree was based on the Record of Decision (ROD) for the Site (EPA, 1986). While the Consent Decree, the RDAP, and the ROD were consulted for the specific definition of the remedies to be implemented at the Site, the RDAP generalized the remedy and formed the basis for Golder's preparation of the Remedial Design Work Plan and ultimately the Final 100% Design Report. This certification applies to the Consent Decree but the primary component is the RDAP.

3.2 100% Design Report and Addenda

Golder developed the design and specifications and produced the "Final 100% Design Report, Part I" for the Industri-Plex Site (Appendix A), which was submitted to EPA and MassDEP in December 1991. This report applied to the remedy for soil, sediments, and air for the Site. Other Consent Decree requirements were deferred in accordance with the Agencies' instructions. The Agencies provided comments on the 100% Design Report, and responses to those comments were submitted April 3, 1992. A revised final 100% Design Report was issued April 3, 1992. The 100% Design was issued for bid April 25, 1992. The 100% Design Report was approved on May 18, 1992.

Subsequent addenda were issued for the 100% Design Report including the following:

Addendum 1 issued May 1992 (EPA/MassDEP Approval March 11, 1993)

Addendum 2 issued June 1992 (EPA/MassDEP Approval March 11, 1993)

Addendum 3 issued May 14, 1993 (EPA/MassDEP Approval May 27, 1993)

Addendum 3 revision 1 August 27, 1993 (EPA/MassDEP Approval September 10, 1993)

Addendum 3 revision 2 October 18, 1993 (EPA/MassDEP Approval November 2, 1993)

On October 1, 1996, EPA approved an alternative permeable cover design for the Regional Transportation Center (RTC) entitled RTC Alternate Cover Design (Golder, 1996). Details of the construction and certification of the RTC Alternative Cover Design are presented in the RTC Cover Certification Report (Golder, 1998), which was approved by EPA on April 29, 1998. The remedy design for a portion of the RRSM (Tax Map 5-1-1) property located along commerce way extention was altered from the 100% Design Report in accordance with the RTC Alternative Cover Design (Golder, 1996) and RTC Cover Certification Report (Golder, 1998).

3.3 Remedial Action Work Plan

According to the Consent Decree, the Remedial Action Work Plan (RAWP) was to be submitted to the Agencies within sixty (60) days after EPA and the Commonwealth received notification of the selected Remedial Action Contractor. The RAWP was prepared by the Remedial Action Contractor for the Remedial Trust to implement the Site remedy consistent with the approved design for each Site area. The Consent Decree required that the RAWP contain:

(1) A description of all the activities necessary to implement the Remedial Actions; and

(2) A timetable for the completion of all these activities, which shall also identify major and minor milestone events in the Remedial Action process. The schedule of significant events shall be consistent with Attachment D, [Project Schedule and Remedial Design/Action Milestones].

On August 18, 1992, prior to EPA's receipt, review, and acceptance of the RAWP the Remedial Trust requested EPA and MassDEP approval of a preparatory, non-intrusive work plan for work that would begin in September. Submittal of this work plan allowed the Contractor to maximize the construction work season while awaiting final approval of the RAWP. An addendum to the August request was submitted to EPA and MassDEP on October 9, 1992 expanding the earlier request to include debris removal and non-intrusive work and above ground structure demolition. Both the August 18 and October 9 requests were tacitly approved by EPA in consultation with MassDEP. As required, the Remedial Trust submitted a RAWP to EPA on October 5, 1992 (Consent Decree Attachment, Section B, Subsection 3B).

An interim RAWP was submitted to EPA on October 22, 1992 with a request to begin work west of the MBTA railroad tracks. EPA in consultation with MassDEP provided comments on the interim RAWP on November 25, 1992 and a revised interim work plan was submitted to EPA in December 1992. With EPA and MassDEP concurrence, the Remedial Trust authorized the Contractor to begin remediation of the Site on December 2, 1992.

EPA's review of the original RAWP, in consultation with MassDEP, continued through the first half of 1993. EPA, in consultation with MassDEP, provided a conditional approval of the RAWP on March 11, 1993. The Agencies had two main concerns, 1) "the effect of the proposed groundwater treatment changes on the 'Created Wetlands' (CW); and 2) the maintenance of air and stream water quality (ARARs) during the construction of the Remedy." EPA, after consultation with MassDEP, requested the following: 1) a revised CW design with a buffer and separation from the groundwater; and 2) implementation of a program for surface water sampling for contaminants.

Following the Remedial Trust's responses, EPA after consultation with MassDEP, presented an approval of the RAWP on May 19, 1993, contingent upon: 1) sampling of surface water to measure water quality; 2) resolution of water treatment design questions; 3) provision of a copy of the Contractor drilling and blasting plan; and 4) a requirement to cover all frequently used roads with a minimum of 4 inches of crushed stone. On July 2, 1993, EPA, after consultation with MassDEP and the Remedial Trust, reached an agreement on procedures for testing surface water and revisions to the CW.

Erosion and sediment control issues prompted further revisions to the RAWP. On March 1, 1994, a major revision to the RAWP was submitted to EPA. EPA, after consultation with MassDEP, approved the revision on July 11, 1994. Subsequent revisions were submitted and the latest version of the RAWP at the preparation of this report is August 21, 1995.

3.4 Health and Safety Plan

A Health and Safety Plan (HASP), prepared by CWM and dated August 1992, for the remediation of the Site was transmitted to EPA, after consultation with MassDEP, on September 2, 1992. The submission was made in fulfillment of the requirements to the Consent Decree Appendix I, Section F. The Remedial Trust was informed at the March 22, 1993 meeting that EPA, after consultation with MassDEP, would not approve the HASP but would provide comments. The HASP was revised on March 16, 1994; December 20, 1994; May 5, 1995; and June 29, 1995 largely to address changes to the Emergency Response Plan. In accordance with the Agencies' policy, the HASP was reviewed but not approved. The latest version of the HASP as of this report is June 29, 1995.

4.0 REMEDIAL DESIGN/ACTIONS

4.1 Soil Remedy

The soil remedy for the Site involved covering on-Site soils containing lead, arsenic, or chromium at or above the action levels established by the Consent Decree with permeable soil cover. An impermeable cover was designed for a four-acre hide pile (East Hide Pile) on Site, which was an active odor source. The East and West Hide piles are located within RRSM property (Tax Map).

4.1.1 Soil Remedy - Consent Decree Requirements

The RDAP is included as Appendix I of the Consent Decree. Throughout the RDAP, the remedy for the Site is referred to as the "cap". However, the 100% Design refers to the Site remedy as the "cover". The term "cover" has been retained for the text of this report, excluding the RDAP.

Page 1 of the RDAP states the following:

"The remedial action for soils, sediments, and sludges contaminated with Hazardous Substances, other than those emitting odors (the East Hide Pile), shall include site grading, capping with a permeable soil cover, excavation, dredging, and/or consolidation for all areas containing Hazardous Substances at concentrations above established action levels (arsenic = 300 ppm, lead = 600 ppm, chromium = 1,000 ppm)...."

Furthermore the RDAP states, "Settlers shall design and implement remedial action for soils contaminated with Hazardous Substances above the action level for metals that shall consist of site grading and capping together with Institutional Controls. Areas already covered adequately by buildings, roadways, parking lots, or other ground covering features, would not receive cover material, instead allowing the structures themselves to act as the protective cap.

For small areas on-Site, such as the landscaped areas between buildings and parking lots, Settlers may propose location-specific alternatives to capping consisting of excavation of contaminated soil and consolidation on-site with similarly contaminated soils, or placement of a protective layer such as asphalt to cap the contaminated soils.

Settlers shall design and implement the remedial actions for contaminated soils in accordance with the following requirements:

(1) cap design and construction activities shall be in accordance with regulations and/or guidance on cap design for permeable covers as summarized in [RDAP] Attachment A ... provided that an alternative permeable cap design including a permeable synthetic fabric and a soil layer less than 30 inches in depth, may be used in all areas of the Site where Settlers demonstrate to EPA and the Commonwealth that the alternative cap design will perform as well as or better than the permeable cap design summarized in Attachment A."

Attachment A to the RDAP states that:

"Permeable covers shall be designed and constructed to include at a minimum the following:

A. A vegetated top layer which shall be:

    1. of a minimum thickness of six (6) inches;

    2. capable of supporting vegetation that minimizes erosion and minimizes continued maintenance;

    3. planted with a persistent species with roots that will not penetrate into the contaminated soils;

    4. designed and constructed with a top slope of between 3 percent and 5 percent after settling and subsidence or, if designed and constructed with less than 3 percent, a drainage plan to ensure that the ponding of surface water does not occur or, if designed and constructed with a slope of greater than 5 percent, an expected soil loss of less than 2 tons/acre/year using the USDA universal soil loss equation; and,

    5. designed and constructed with a surface drainage system capable of conducting effective run-off across the cap.

B. A base layer that shall be:

    1. of a minimum thickness of twenty-four (24) inches of appropriate fill material; and,

    2. designed and constructed to prevent clogging."

Two alternative permeable covers were designed as part of the remedy under the Consent Decree. The first alternative permeable cover design concept utilizing a 16-inch thick borrow cover overlaying a geotextile was developed in the Alternative Cover Design Report (Golder, 1989). This design was subsequently approved by the EPA and MassDEP in a letter dated September 11, 1989. The second alternative permeable cover design was the design to accommodate the RTC Alternative Cover (VHB/Golder, 1996). The EPA, in consultation with the MassDEP, approved the RTC Alternate Cover design in a letter dated October 1, 1996. The RTC Alternative Cover was properly constructed and documented in the RTC Cover Certification Report (Golder, 1998), approved by EPA on April 28, 1998.

4.2 Sediment Remedy

4.2.1 Sediment Remedy – Consent Decree Requirements

The Consent Decree (EPA, 1989) briefly explains the work to be performed and establishes the requirements for remediation of sediments presented in the RDAP. Sediments within streams and wetlands where there are "no odor-emitting Hazardous Substances (e.g. hide wastes), Settlers shall dredge the Hazardous Substances or remove them by another method shown to be environmentally protective and approved by EPA in consultation with the Commonwealth".

The RDAP mandates "an in-situ cover for areas with sediments containing Arsenic, Lead, and/or Chromium at or above Consent Decree action levels, and hide residues, stipulating that these capping activities will be consistent with other technical requirements of the RDAP".

The RDAP also requires that excavated sediments be "consolidated in other areas of the Site which contain such Hazardous Substances and which will be covered as part of the approved remedial action".

4.3 Air Remedy

4.3.1 Air Remedy - Consent Decree Requirements

The RDAP, which is included as Appendix I of the Consent Decree, outlines general guidelines for the air remedy for the East Hide Pile. The RA for the control of air emissions was designed "to mitigate the release or threat of release of Hazardous Substances, including odors associated with decaying hide waste, in the East Hide Pile".

The RA consists of:

(a) "stabilizing the side slopes of the East Hide Pile;
(b) installing a gas collection layer;
(c) capping with a synthetic membrane to establish impermeability
(d) [installing] soil cover in accordance with Attachment A; and
(e) treating gaseous emissions with either activated carbon or thermal oxidation".

The RDAP also specifies that a permanent gas treatment system was to be installed after the impermeable cover and gas collection system were constructed and allowed to reach equilibrium. EPA, in consultation with MassDEP, was to specify the final treatment decision regarding the permanent gas treatment system. The decision was to be based on what system proved to be most efficient and cost-effective, in addition to a number of other engineering design criteria.

5.0 SITE CONTROLS AND DOCUMENTATION

5.1 Survey Control

The Contractor utilized Meridian and Earth Tech to provide record survey documentation of the extent of cover, configuration of grading and general as-built conditions of the cover and any buried or concealed construction. The results of these record surveys are provided in Attachment 1 (Sheets C-29through C-48). The record drawings are based on the survey control provided in the 100% Design Report plans.

5.2 Construction Control

During the RA work, the Contractor was required by the project specifications to provide controls to maintain a safe work environment and protect the public health and safety. Such controls included air monitoring and surface water monitoring (**Appendix D**).

Air Monitoring

The objective of the ambient air monitoring program was to monitor total reduced sulfur (TRS) compounds and total suspended particulate (TSP) and inhalable particulate (PM10) as well as heavy metals (arsenic, lead and chromium) in TSP at fenceline locations during remediation efforts.

Specification section 01562 - Dust Control of the 100% Design Report required the contractor to employ construction methods and means that would keep airborne particulates below the following action levels:

- PM10 particulates were to be limited to an annual average of less than 150 micrograms per cubic meter (µg/m3) at Site monitoring points; and
- Respirable dust concentrations were limited to 90 µg/m3 at Site monitoring points and 5,000 µg/m3 in the worker's breathing zone.

Data gathered by dust monitoring devices was used to monitor metals in the particulates to ensure that they were below the following threshold limit values (TLVs) outlined in the American Council of Governmental and Industrial Hygienists:

Arsenic	Chromium	Lead
0.02 μg/m^3 (of air)	1.36 μg/m^3 (of air)	1.36 μg/m^3 (of air)

Appendix B to Volume 6 of the 100% Design Report provides a detailed Odor Control Plan which specifies that TRS compounds in air at the perimeter of the Site may not exceed 47 parts per billion (ppb).

Eastmount Environmental Inc. conducted ambient air quality testing, beginning in September 1992. The particulates and heavy metals were sampled at four perimeter monitoring locations. TRS sampling was conducted at seven perimeter monitoring locations. See **Appendix D.1** for a map indicating sample points.

TSP and PM10 Sampling

TSP and PM10 samples were collected using Hi-Volume samplers. Each Hi-Volume sampler was programmed to sample at each of the four sample locations from midnight to midnight on six day intervals. In addition to the four sample locations, a duplicate TSP sampler was stationed at Location 4 and a duplicate PM10 sampler was stationed at Location 2. The duplicate TSP sample was also analyzed for metals (arsenic, chromium, and lead).

Eastmount Environmental prepared Hi-Volume Sampling Summary reports. The Summary of Hi-Volume Results tables from those reports issued for periods during performance of work on the RA are included in **Appendix D.1**. Analytical results showed levels of TSP, PM10, and metals below the action levels.

TRS Sampling

The ambient TRS sampling was conducted using a Photovac 10S Plus portable gas chromatograph capable of measuring odorous sulfur compounds in the low part per billion range. Ambient TRS sampling was conducted twice a week from the beginning of the sampling program up until December 1992. After that, the sampling frequency was reduced to once every six days.

Eastmount Environmental prepared Ambient Air Sampling Summary reports. The Summary of Ambient TRS Results tables from those reports issued for periods during performance of work on the RA are included in **Appendix D.1**. The majority of TRS results were non-detects. Hydrogen sulfide was detected on a few occasions; however, there were no exceedances of the 47 ppb action level.

Surface Water Monitoring

CWM was also required to monitor surface water during remedial activities. According to the Site Surface Water Monitoring Plan (RAWP, Section 5.2), the following Ambient Water Quality Control (AWQC) concentrations were used as the response action levels for the Industri-Plex Site:

- AWQC chronic concentration for arsenic = 0.190 milligrams per liter (mg/L);
- AWQC chronic concentration for chromium = 0.210 mg/L; and
- AWQC acute concentration for lead = 0.082 mg/L.

The above-tabulated AWQC limits correspond to a hardness of 100 parts per million (ppm). Water hardness values on-Site indicated moderately hard to very hard conditions (EPA, 1986). Historical background surface water data collected from surface water drainways periodically contained lead concentrations of 0.025 mg/L. Since these background levels routinely exceeded the threshold value of the AWQC chronic concentration for lead, the AWQC acute concentration was approved on June 8, 1994 as the response action level by MassDEP and EPA.

Surface water sampling was conducted to meet the project specifications and the RAWP requirements. The surface water controls established by EPA and included in the Contractor's RAWP required the following procedures:

- Each work day, field measurements were conducted at various stations (whenever there was flow) for turbidity, dissolved oxygen, temperature, specific conductivity, and pH. The sample from each station with the highest turbidity during the week was submitted for laboratory analyses of total and dissolved arsenic, lead, and chromium, total suspended solids (TSS), and hardness. Any sample with a turbidity greater than or equal to 85 nephelometric turbidity units (NTU) was also submitted for the same laboratory analyses.

- Additional sampling was conducted if a storm and/or a construction event caused the turbidity to rise above 85 NTU at the monitoring stations. The samples were analyzed for total and dissolved metals (arsenic, chromium, and lead), TSS, and hardness. Field measurements for turbidity, dissolved oxygen, temperature, specific conductivity, and pH were conducted at the time of sampling.

HMM conducted surface water quality sampling as a subcontractor to CWM. Test results indicate that the surface water quality remained below the response action thresholds with the exception of exceedances as listed in **Appendix D.2**. Specific reasons and mitigating actions for each exceedance are described in the Quarterly Reports of 1993-1995. Generally, the Agencies were notified and the mitigating actions were performed to the satisfaction of the Agencies.

5.3 Decontamination

CWM was required to decontaminate all equipment that came in contact with contaminated soils, sediments, and sludges during the work. Water used during the pressure washing was collected and treated at the on-Site storage areas. The decontamination was performed in accordance with the specifications and the project work plans. Water generated from decontamination activities was stored in a Modu-tank on the east side (across the MBTA rail lines) of the Site. The water was treated and properly disposed of on-Site as approved by the Agencies.

Personnel entering work areas (exclusion zones) during the RA, wore protective equipment as specified by CWM's Health and Safety Plan (HASP). The HASP also specified personal decontamination procedures. All personnel leaving work areas were required to properly clean or dispose of all protective equipment, small tools and instruments.

5.4 Facility Documentation for Off-Site Disposal

Prior to disposing of any materials off-Site during the RA, EPA was to determine if the proposed facilities were of "acceptable status" and could receive materials from the Site. Only non-hazardous vegetation (cleared/cut above ground surface) was disposed off-Site during the RA. During the work, as previously discussed, wastewater from decontamination activities was stored on the east side of the Site and treated prior to disposal.

All grubbed vegetation (containing soil), and contaminated soil, sediments, and sludges excavated from the Site were consolidated in other areas of the Site in accordance with the RDAP. All contaminated materials excavated from the Site were placed on the hide piles that were covered as part of the approved RA. However, prior to placement on the hide piles, saturated sediments and sludges were dried over large areas east of the MBTA rail lines on the Site within the remedial cover area.

6.0 SOURCE AND CONFORMANCE TESTING

Testing performed for the Remedial Trust, such as testing of soil and soil products and geosynthetics, is described in Sections 6.1 and 6.2, respectively. The testing methods according to the specifications are summarized in **Table 2** [i.e., Golder's Quality Assurance Procedure Plan (QAPP) Table 1-1]. Abbreviations used in the supporting documentation found in the appendices are summarized in **Table 3**.

6.1 Soil and Soil Products

6.1.1 Compacted Fill

The majority of compacted fill materials were derived from on-Site grubbing and dredging operations. Compacted fills were used as stabilizing fill to flatten hide pile slopes and re-grade low relief areas to promote drainage. A portion of rock and concrete demolition debris generated by crushing and screening operations was also used to a limited degree as compacted fill material. The remaining compacted fill was imported from off-Site borrow areas. Most of the off-Site fill was composed of silty sand from a quarry in Hubbardston, Massachusetts and glacial till from a borrow pit on Deer Island, Boston Harbor, Massachusetts. Compacted fill tests included grain size distribution and primarily Standard Proctor tests with some Modified Proctor tests as needed.

6.1.2 Cover Soil

All cover soil used on-Site was from off-Site sources. Cover soil placed on slopes flatter than 8 horizontal to 1 vertical (8H:1V) was typically a granular silt from a glacial till deposit on Deer Island. Cover soil placed on slopes steeper than 8H:1V and some slopes flatter than 8H:1V was a silty sand from a quarry in Hubbardston. Cover soil tests included grain size distribution, Standard and Modified proctor densities, interface friction, and Atterburg Limits. Results of the testing are provided in **Appendix F**. Analytical testing was performed on Deer Island cover soil materials to verify the levels of potential contaminants. All soil materials tested and placed on-Site met the clean soil thresholds set up by EPA, after consultation with MassDEP, or were otherwise approved by a variance in accordance with EPA in consultation with MassDEP criteria. EPA in consultation with MassDEP clean soil threshold criteria for cover soil used at the Site are summarized in **Table 1**. Analytical test results are provided in **Appendix F.1**.

6.1.3 Topsoil

According to the Consent Decree, topsoil must be capable of supporting vegetation that minimizes both erosion and continued maintenance. Topsoil used for the cover in upland areas and as a wetland vegetative cover soil came from several off-Site sources. Such source locations were from the following Massachusetts towns: Andover, Reading, Salem, and Tewksbury. Other topsoils were sourced from the following New Hampshire towns: Nashua, New Boston, and Manchester. Each source was tested for grain size distributions, organic content, and soil fertility or Baker Soil test. Results of testing are provided in **Appendix F.2.3**. Where the topsoil did not meet some criteria, but would be capable of meeting the Consent Decree requirement for being capable of supporting vegetation, a variance was requested and received from EPA, after consultation with MassDEP.

6.1.4 Subangular Stone

There were several varieties of subangular stone required by the 100% Design Report. Each of the subangular stone materials was a product of off-Site crusher/screener operations from PJ Keating Company of Lunenburg, Massachusetts or Bardon Trimount Inc. of Burlington, Massachusetts. The products required for the RA included American Association of State Highway and Transportation Officials (AASHTO) No. 8, the stone used in the gas collection layer material; AASHTO No. 57, a variety of stone used for bedding and armoring purposes; and both AASHTO 2 and 67, stone materials used in sediment filter construction. Testing of these stone materials consisted of the following: grain size, permeability, and carbonate content. Testing was performed on a per source basis unless the Remedial Trust requested additional testing. Test results are provided in **Appendix F.2.2**.

6.1.5 Stone Riprap

Two average sizes of stone riprap (d50 = 6-inch and d50 = 3-inch by weight) were required by the 100% Design Report. Each of the riprap stone materials was produced at off-Site crusher/screener operations owned by PJ Keating Company of Lunenburg, Massachusetts or Bardon Trimount Inc. of Burlington, Massachusetts. Both types of stone riprap were used as gravel/cobble lining for remediated drainways and hide pile toe drain construction. The 6-inch riprap was also used in permanent erosion control features and as gabion backfill material.

Testing of the riprap included a test for abrasion, freeze-thaw susceptibility, and specific gravity. Gradation tests were also reviewed. Stone riprap materials were tested once per source area unless the Remedial Trust requested additional testing. The stone riprap test results are presented in **Appendix F.2.2**.

6.1.6 Subbase

Road Structural Fill as specified in Section 02223 was used as subbase in the Remedial Action. Tests for the subbase material included gradation and compaction. All subbase materials were supplied by an off-Site quarry. Test results are provided in **Appendix F.2.1**.

6.2 Geosynthetics

6.2.1 Geotextile

6.2.1.1 Materials

Geotextile materials were supplied by the following three manufacturers: Nicolon/Mirafi, Polyfelt Americas Inc., and Synthetic Industries. Nicolon/Mirafi provided 6-ounce (oz), 10-oz and 16-oz geotextile, Polyfelt Americas Inc. provided 6-oz and 16-oz geotextile and Synthetic Industries provided 16-oz geotextile. All fabrics are permeable, non-woven, needle-punched monofilament and allow percolation. The geotextile was used in the cover to primarily separate the contaminated soil from the clean cover soil (Golder, 1989). The geotextile also precludes upward migration of contaminated material by frost heave effects; provides a drainage capillary break layer at the base of the cover on slopes to prevent sloughing during thaws; and provides further means of reducing the chance of incidental contact through land use.

6.2.1.2 Quality Control Testing

The manufacturers of the geotextile material provided Quality Control certificates for the installed 6-, 10-, and 16-oz materials. Copies of the Quality Control Certificates are presented in **Appendix H.1.2**. As material was delivered to the Site, Golder reviewed the Quality Control Certificates for conformance with the 100% Design through the submittal process.

6.2.1.3 Quality Assurance Testing

Rolls of 6-, 10- and 16-oz geotextile were tested for conformance to the 100% Design Report specifications. Conformance testing was performed by Golder Construction Service's Geosynthetic Laboratory (Golder Construction's Geosynthetic Laboratory) located in Atlanta, Georgia. Test results are provided in **Appendix H.1.3**. Before individual rolls of geotextile were deployed on-Site, Golder reviewed the test results for conformance with the project specifications.

6.2.2 Geomembrane

6.2.2.1 Material

Rolls of 60 mil HDPE geomembrane liner were supplied by National Seal Company and deployed over the East Hide Pile.

6.2.2.2 Quality Control Testing

The manufacturer of the geomembrane material provided Quality Control Certificates for each roll of 60 mil HDPE geomembrane liner. These certificates are provided in **Appendix H.2.2**. As submitted by the contractor, Golder reviewed the Quality Control Certificates for conformance with the project specifications before the material was used on-Site. Based on the Quality Control Certificates, the geomembrane liner used was in conformance with the 100% Design Report specifications.

6.2.2.3 Quality Assurance Testing

Rolls of HDPE geomembrane liner were sampled and tested for conformance with the 100% Design Report specifications. The conformance testing frequency exceeded the project specifications requirement of one conformance test for every 100,000 square feet of geomembrane liner delivered to the Site. All of the geomembrane liner conformance test samples passed the minimum project specification requirements. All of the conformance samples were tested by Golder Construction's Geosynthetic Laboratory. These test results are provided in **Appendix H.2.4**.

6.2.3 Geocomposite

6.2.3.1 Material

Rolls of TN3002CN geocomposite, geonet with a factory bonded geotextile on both sides, were supplied by Fluid Systems and delivered to the Site. The geocomposite was used for supplementary drainage in the permeable cover on the West Hide Pile where slopes were 25 percent or steeper and on the East Hide Pile over geomembrane

6.2.3.2 Quality Control Testing

The manufacturer of the geocomposite material provided Quality Control Certificates. Golder initially reviewed the Quality Control Certificates for conformance with the 100% Design Report specifications and determined the material did not meet the project specifications. Consequently, the Contractor provided a letter of evaluation which concluded that the geocomposite was capable of providing drainage per the design. This letter is provided in **Appendix H.3.2**. Golder also evaluated the drainage capability of the material and confirmed the geocomposite would provide the drainage capacity of the design storm. The material was accepted for use.

6.2.3.3 Quality Assurance Testing

Rolls of geocomposite were sampled and tested for conformance with the project specifications; conformance samples were tested by Golder Construction's Geosynthetic Laboratory. Transmissivity tests were performed by TRI/Environmental Inc., Austin, Texas. Test results are provided in **Appendix H.3.3**.

6.2.4 Geogrid

6.2.4.1 Material

Rolls of UX1400 uniaxial geogrid were supplied by Tensor Inc. and delivered to the Site for placement on the West Hide Pile slopes. These geogrid materials were used to reinforce the cover layer only where the slope of the cover was steeper than 33 percent.

6.2.4.2 Quality Control Testing

The manufacturer of the geogrid materials provided Quality Control Certificates. Through submittals, Golder reviewed the Quality Control Certificates for conformance with the 100% Design Report specifications. Copies of the Quality Control Certificates are presented in

Appendix H.4.2. Based on the Quality Control Certificates, the geogrid used was in conformance with the 100% Design Report specifications.

6.2.4.3 Quality Assurance Testing

Rolls of geogrid were sampled and tested for conformance with the 100% Design Report specifications. All the conformance tests of the geogrid met the minimum 100% Design Report specification requirements and were tested by Golder Construction's Geosynthetic Laboratory. Test results are provided in **Appendix H.4.3**.

6.2.5 Interface Friction

A key design concern for the cover is its internal stability on slopes. The 100% Design Report required testing of the interface friction between the cover soil and the geotextile. Representative tests of cover soil with geotextile or geocomposite materials were required to verify the design friction angle of 26 degrees. The Contractor presented a testing program and provided initial source test results of the interface friction. Through submittals, Golder reviewed the source test results and determined that, based on the Contractor's certification of source representative testing, the cover soil with geotextile or geocomposite met the 100% Design Report specification requirements. Additional testing was performed by Golder on representative samples of cover soil and geotextile or geocomposite materials for interface friction from the East and West Hide Piles. Conformance testing of interface friction was performed on a 12-inch by 12-inch direct shear apparatus in the Golder testing laboratory in Calgary, Canada. All conformance test results showed the cover soil with geotextile or geocomposite met the 100% Design Report specifications. Test results are provided in **Appendix H.6**.

6.3 Asphalt Cover Materials [Not Applicable To This Property]

7.0 REMEDY CONSTRUCTION

7.1 Construction Sequence

7.1.1 Decommissioning

7.1.1.1 Decommissioning Wells

Various existing wells and piezometers were identified in the 100% Design Report requiring decommissioning or abandonment prior to construction of the cover on the Site. The 100% Design Report identified wells and piezometers to be decommissioned; however, during grubbing operations for the Remedial Action, additional unidentified wells (UID) were located. The Contractor with a subcontractor (Maher) proposed and submitted for review decommissioning methods for each well in accordance with the 100% Design Report specifications. Maher used several drilling rigs during the decommissioning work, including all-terrain vehicles for remote locations, and Barber dual rotary drill for over drilling wells. A Smeal pump hoist was used to perforate Poly-vinyl chloride (PVC) pipe left in place. All cuttings were retained in water tight roll-offs and later deposited on the west side of the East Central Hide Pile. PVC pipe removed during decommissioning was disposed of off-Site after decontamination. From December 1992 until April 1993, the majority of the wells were decommissioned or abandoned in accordance with the 100% Design Report specifications. Three monitoring wells (OW-31, OW-32 and OW-36), three previously unidentified wells (UID-22 , UID-23, and UID-24), and five previously unidentified boreholes (BH-9 through BH-13) located on the RRSM property were decommissioned or abandoned in accordance with the 100% Design Report.

After reviewing the contractor's well decommissioning reports, Roux Associates confirmed that well decommissioning on the Site was substantially compliant with the 100% Design Report and the procedures outlined in Section 4.6 of the January 2001 Standard Reference for Monitoring Wells set forth by MassDEP. Wells were over drilled, pulled, or grouted in place with a grouting mixture of 95% cement and 5% bentonite. Wells were grouted to appropriate depths and plugged with concrete after the time requirement set forth by the standard. Copies of the driller's decommissioning logs are provided in **Appendix E**.

7.1.1.2 Decommissioning Utilities and Structures

The 100% Design Report identified features that required decommissioning or abandonment prior to construction of the cover for the Remedial Action. Other abandoned below grade features that were discovered during construction of the cover were either removed to a depth 2 feet below the placement of the permeable cover or cleaned and backfilled with clean concrete. These features were left in place without any demolition or decommissioning if they did not otherwise impair the long-term effectiveness of the remedy. The general majority of the structure decommissioning occurred during construction of the RTC. A more detailed illustration of this decommissioning can be found in the "Final Report on RTC Cover Certification" dated April 1998 and prepared by Golder.

7.1.2 Soil Remedy

7.1.2.1 Subgrade and Drainage

Existing vegetation was cleared and root matter grubbed to a minimum depth of one foot prior to placement of the permeable cover in areas other than the South Hide Pile. No herbicides were employed to control re-establishment of vegetative growth. Tree roots were grubbed to a depth of 2 feet. In areas of the hide piles, all existing vegetation was cleared by means of back blading with a dozer, and brush or tree roots were cut to ground surface in order to minimize cutting into the hide pile. Woody material from above ground, roots and other vegetation were chipped and stockpiled for later placement as fill under the permeable cover. Rocks and concrete debris grubbed from the surface were crushed on-Site in order to comply with the fill material specifications. Reinforcing steel was removed from the concrete during the crushing operations and stockpiled for off-Site disposal.

The cover area in the vicinity of bedrock outcrops or exposed concrete structures was grubbed of vegetation and cleaned in accordance with recommendations of the Site Health and Safety Officer and documented by the Contractor. The surrounding soil cover was extended up to the outcrop or structure.

Material excavated on-Site was the primary source of fill to regrade the slopes of the hide pile or regrade flat areas to provide positive drainage. A granular material has less than 12% by weight passing the #200 sieve. Materials placed to flatten the South Hide Pile were from on-Site sources but were not granular. On-Site soils not meeting the granular criteria were placed as fill in permeable cover areas of the Site flatter than 8H:1V.

Existing subgrade soils were proof rolled prior to placing the cover and fill materials were compacted and tested. The final prepared grade was rolled with a 10-ton smooth wheel compactor or in small areas compacted with a hand operated plate vibratory compactor. Where positive drainage was called for in the 100% Design Report plans, such drainage was achieved in the finish grade of the cover. Throughout construction, erosion and sedimentation measures were generally utilized and maintained in accordance with the 100% Design Report specifications to control soil loss. Any deficiencies in the erosion and sedimentation measures were corrected in accordance with EPA in consultation with MassDEP guidelines.

7.1.2.2 Geosynthetics

After proof rolling, the prepared subgrade was inspected and any protruding debris or roots greater than ½-inch in diameter were manually removed prior to placing geosynthetics. After geosynthetics were placed, filling was performed to reach final elevations. On the east hide pile the gas venting layer was installed prior to the installation of the geosynthetic layers of the cover.

A 6-oz and 16-oz per square yard non-woven geotextile were used in permeable cover (other than on the East and West Hide Piles) where slopes were less than and more than 25 percent respectively.

A 16-oz per square yard non-woven geotextile was used in the East and West Hide Pile permeable cover where slopes were less than 25 percent. The TX3002CN geocomposite was used in the East and West Hide Pile permeable cover where slopes were steeper than 25 percent and the UX1400 geogrid was added over the geocomposite where slopes exceeded 33 percent. The geocomposite drain material extended to an elevation approximately 10 feet above the toe of the hide pile slopes to intercept any seepage from potential groundwater mounding within the hide pile.

A 10-oz. per square yard non-woven geotextile, 60-mil textured HDPE geomembrane, and geocomposite drainage layer were installed above the gas venting layer in the East Hide Pile engineered permeable cover. The 8-inch diameter perforated gas collection piping system was also wrapped in 10-oz. per square yard non-woven geotextile.

The geotextile materials were sewn together using white nylon thread for dark fabric and black thread for white fabric. Geocomposite was joined at the net with nylon cable ties and then sewn or thermal bonded with another piece of geotextile to minimize cover soil infiltration into the net.

The geotextile seam was initially placed with a minimum slack along the seam to protect it and allow for movement in the geotextile during placement of cover soil. This procedure was primarily practiced in the developed areas of the Site with little topographic relief. Subsequent reviews of the procedure and the 100% Design Report concluded the extra slack was unnecessary and the procedure was discontinued for the remainder of the Remedial Action.

The geomembrane was seamed by welding and the seams were subjected to quality control and quality assurance testing as described in Sections 6.2.2.2, 6.2.2.3, and 9.5.

7.1.2.3 Cover Soil

Cover soils placed over the geotextile on slopes greater than 8H:1V were granular materials from off-Site sources that had an inherently low potential to clog the geotextile. For slopes flatter than 8H:1V, the cover soil from off-Site sources could contain more than 12 percent by weight passing the #200 sieve. In all areas where the remediated slope was steeper than 33 percent, a geogrid reinforcement layer was included at the base of the cover soil immediately above the geosynthetic layer. The cover soil was placed in a manner that minimized imposed stresses on the underlying geosynthetics by using low ground pressure earth moving equipment and maintaining a minimum thickness of 12 inches of soil between the rubber tire equipment and the geosynthetic. Cover soil placed in unpaved areas with permeable cover was nominally compacted by the action of the placing equipment only.

Other cover sections used in limited areas or for access roads were comprised of various combinations of cover soil and dense graded aggregate subbase or riprap. Each modified section of cover is designed to be a minimum of 16 inches in accordance with the specifications of the 100% Design Report. The types and locations of these modified sections are included in the record drawing documentation, **Attachment 1**.

Minimum thicknesses of cover soil are detailed in Section 02242 of the 100% Design Report. Generally, the permeable cover consists of 12 inches of select soil fill and 4 inches of topsoil. Generally, the drainage swale impermeable cover consists of 16 inches of riprap. The tolerance, in thickness is -0.0 feet and +0.3 feet. Based upon survey data collected both at the time of construction, as well as post construction data collected, the vast majority of the Site meets the design thickness within the tolerances.

Any isolated areas identified by multiple post construction survey data points to be below the acceptable tolerances, were corrected by the placement of additional cover fill to meet the required thickness. This repair of cover fill was performed during the summer of 1999 by Maverick. Following repairs, Meridian identified two locations (28312 and 28333) where thicknesses did not meet design requirements. In September 2008 Roux Associates uncovered these locations to verify Meridian's findings. Roux Associates determined that the depth to geotextile identified by Meridian was the result of a fold in the geotextile fabric and did not reflect the true thickness of the cover. As measured by Roux Associates, the cover thickness was approximately 16-inches and 17-inches for points 28312 and 28333 respectively.

Based on analysis of the of the relevant survey data points RRSM Tax Map5-1-1, the minimum thickness of cover soil specified in Section 02242 of the 100% Design Report was met at all locations surveyed throughout the subject parcel.

7.1.2.4 Topsoil and Vegetation

Topsoil was placed over the cover soil in 4-, 6- or 8-inch thicknesses as specified by the 100% Design Report. After placing the top soil, lime and fertilizer were applied to the topsoil by a York rake in larger areas and by a walk-behind drop-spreader for small areas. Seed was broadcast by the hydroseed method in all other areas using fertilizer mulch and seed according to the 100% Design Report, or approved variances.

7.1.3 Sediment Remedy

7.1.3.1 Wetland Sediments

The sediment remedy included the remediation of wetlands throughout the Site. The 100% Design Report indicated two remedy solutions for the remediation of wetlands. In sediment remedy areas where Arsenic, Lead and/or Chromium exceeded the established Consent Decree action levels and hide residues were found, a 16-inch thick permeable cap consisting of a 16 ounce nonwoven geotextile placed on the sediments, followed by a 12-inch soil cover with a 4-inch thick topsoil layer was placed over the sediments. In sediment remedy areas where Arsenic, Lead and/or Chromium exceeded the established Consent Decree action levels in absence of hide residues, the sediments were dredged to a depth of 16-inches and a 16-inch thick permeable cap consisting of 16-ounce nonwoven geotextile followed by 8-inches of gravel and 8-inches of topsoil were placed over the sediments. Wetland 2A, located on the EHP property, was evaluated as a Stream Sediment remedy solution due to its elongated shape and flow patterns similar to a typical stream. Wetland 2A will be addressed in Section 7.1.3.2 Stream Sediments.

7.1.3.2 Stream Sediments

The sediment remedy included remediation of streams throughout the Site. The 100% Design Report states that the streams on Site serve several functions as part of the remedy. These functions include the collection of stormwater from surrounding drainage areas, the conveyance of stormwater form upstream, and the storage of backwaters during a storm. The remedy for stream sediments was designed to satisfactorily perform all of the aforementioned functions. Additionally the following criteria were considered in the selection of the remedy:

- Ability to perform in accordance with their design objectives for a minimum of 30 years;
- Satisfactory performance under varying groundwater conditions and to prevent sediment transport via groundwater seepage toward the stream;
- Prevention of surface water from contacting sediments and, possibly, transporting sediments downstream;
- Minimization of storage capacity losses;

- Satisfactory performance under variable weather conditions;
- Maintenance of discharge capacity so that peak discharges can be conveyed without increasing flood potential;
- Minimization of excavation of hide residues, and;
- Continued ability to collect runoff from the surrounding drainage areas.

The 100% Design Report offered three remedy choices for application in stream sediment scenarios. The first stream sediment remedy, for streams containing Arsenic, Lead and/or Chromium at or above Consent Decree action levels, in the absence of hide residues, consisted of a gravel/cobble cap to be placed after dredging the sediments. A minimum of 16 inches of sediments was dredged followed by the placement of a 16 ounce nonwoven geotextile and a 16 inch gravel/cobble with a d_{50} of 3-inches. The second stream sediment remedy, for streams containing Arsenic, Lead and/or Chromium at or above Consent Decree action levels and hide residues, utilized the same cover with the minimum amount of dredging consistent with maintaining storm flow capacity. A third stream sediment remedy consisted of culvertization. The culvertization was selected only for the portion of the Western Branch of the Aberjona River adjacent to the East Central Hide Pile, where regarding the slope of the hide pile, for stabilization purposes, does not allow other solutions.

Based on the presence of hide residues on the EHP property, the second stream remedy was applied to the Wetland 2A. 16-ounce non-woven geotextile was laid in the stream bed following minimal dredging of the sediments. A 16-inch thick layer of gravel/cobble overlies the geotextile. Slopes of the gravel/cobble lined channel have a minimum base width of 4-feet and side slopes of one to one or flatter.

7.1.4 Air Remedy

The air remedy consists of a cover constructed in accordance with Section 7.1.2. Gas collection and treatment are described below.

7.1.4.1 Gas Collection

The gas collection system is incorporated in the impermeable cover for the East Hide Pile. The system consists of a 12-inch thick layer of gravel with a network of ten 8-inch diameter perforated fiberglass collection pipes radiating bilaterally from a central 8-inch diameter

fiberglass manifold pipe. Collection pipe to manifold junctions are located in vaults along the manifold, and are controlled by pneumatically controlled butterfly valves.

The gas collection system was installed as specified in the 100% design report. Design changes include an increase in the gas collection pipe size, layout of the collection pipe, and vault locations. Design changes are documented in Attachment 1, Attachment 2, Section 8.3, and Appendix C.

7.1.4.2 Gas Treatment

A thermal oxidizer unit (TOU), designed and constructed by NAO, Inc., was installed at the East Hide Pile. The TOU system includes a direct fired flare, gas pressure boost blowers, control system. A building (the TOU building) was constructed to the northeast of the East Hide Pile to house the TOU components and provide both storage and office space. Record drawings of the TOU, TOU building, and gas collection system are included in Appendix K.

The TOU flare and boost blowers were installed outside along the north wall of the TOU building. TOU system controls, and continuous emissions monitoring system (CEMS) were installed inside the TOU building. Initially, the TOU was designed to operate using natural gas as the supplemental fuel, however, in October 1994 the system was redesigned to operate using propane and propane storage tanks were installed on a concrete pad located to the east of the TOU building. In February of 2001 the TOU was modified back to the original configuration using natural gas as the supplemental fuel.

The CEMS was initially designed by Anarad, but this system was not installed because of conflicts identified during design review between the system measurement method and the compounds likely to be emitted from the TOU stack. A second CEMS was designed and installed by Datatest. However, subsequent alterations to the TOU operational cycle resulted in the formation of condensation in the stack probe and required further alteration of the CEMS. The CEMS was modified to accommodate the revised operational cycle, and became fully operational in February, 1998. The CEMS is a Thermo Environmental Instruments (TEI) Model 200 gas analyzer. The analyzer is integrated with the TOU PC-base control system which performs data logging.

A Compliance Assessment of the TOU system was performed by TRC Environmental Corporation, the result of this assessment are presented in the Draft Final Report "Compliance Emissions Testing of a Thermal Oxidizing Unit at the Industri-Plex Site Remedial Trust in Woburn, Massachusetts" dated May 2003. This report is presented in Appendix K. Based on the results of this report, the TOU was operating as required by the 100% Design Report.

8.0 DESIGN CHANGES

Section 8.0 describes design changes associated with the Alternative Cover Design Report (Golder, 1989), approved by EPA on September 11, 1989, and the RTC Cover Certification Report (VHB/Golder, 1996), approved by EPA on October 1, 1996.

8.1 Change Management

During the Remedial Action from 1992 to 1994 for the Site, changes were managed through the Remedial Trust. At the start of 1995, the Remedial Trust and Contractor agreed to a new scope and cost contract for the remaining remedial work. The Construction Management contractor, Golder Construction, performed change management during 1995 as an agent for the Remedial Trust.

Managing changes for the Remedial Action primarily included changing the agreed upon scope of work or technical details of the 100% Design Report. Requirements identified in the Consent Decree were not changed unless approved by EPA, after consultation with MassDEP. Changes could be initiated from any of the following: EPA or MassDEP, the Contractor, the Remedial Trust or Golder as the designer, and later, Golder Construction in the role of Construction Managers.

Changes were divided into two categories, design specification changes and administrative, cost and schedule changes. Design specification changes were usually technical in nature and involved specific changes to the details of the specifications and plans presented in the 100% Design Report. Generally these changes were minor and EPA, after consultation with MassDEP, initially wanted only to review significant changes. Design changes were originally documented as design/specification change requests (DSCR). Impacts to cost and schedule were handled by another system administered by the Remedial Trust.

Early in 1994, the Contractor made several management revisions including a new method for managing changes. The Contractor introduced a change management system that included Variance Requests (VRs), Change Request Authorizations (CRAs), Corrective Action Requests (CARs), and Requests for Information (RFIs), procedures that subsequently were accepted by the Remedial Trust. The DSCR system was phased out by mid 1994 with the introduction of this

change management system. Copies of all the associated forms pertaining to this Cover Certification Report are included in **Appendix C**.

8.2 Site Wide Design Changes

A series of DSCRs and CARs were adopted for Site wide application.

The Site wide design changes listed below were approved by the resident design engineer, project manager, EPA and/or MassDEP. The design changes generally related to grubbing, geotextile selection, geotextile installation, fill materials selection, and fill materials sampling. Several design changes applied to design details that required revision to match the 100% Design Report. The approved design changes included:

- DSCR-001
- DSCR-002
- DSCR-003
- DSCR-023
- DSCR-027
- DSCR-030
- DSCR-056
- DSCR-069

Additional Site wide design changes were identified as requiring further review in order to verify compliance with the 100% Design Specifications. These design changes included:

- CAR-053 involved a request for resampling of Deer Island Stockpile materials due to incorrect initial sampling procedures. The stockpile was resampled on March 30, 1994 and approved by the Agencies on April 28, 1994. The CAR was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-071 involved a request for resampling of soil Stockpiles 5 and 6. Hold times for volatiles in the soils were exceeded. The Remedial Trust decided to accept data for Stockpile 5, but requested Stockpile 6 be resampled. Stockpile 6 was resampled on March 30, 1994, and test results were approved by the Agencies on April 28, 1994. The CAR was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

8.3 Property-Specific Design Changes

A series of DSCRs, CARs, VRs, and CRAs were adopted for application on the subject properties.

The property-specific design changes listed below were approved by the resident design engineer, project manager, EPA and/or MassDEP. The design changes generally related to geosynthetics materials, materials placement, grading, and wetland specifications. The approved design changes included:

- DSCR-011
- DSCR-012
- DSCR-013
- DSCR-024
- DSCR-034
- DSCR-036
- DSCR-050
- DSCR-052
- DSCR-053
- DSCR-054
- DSCR-078
- VR-002
- VR-004
- VR-005
- VR-008
- VR-009
- VR-010
- VR-012
- VR-014
- VR-021
- VR-024
- VR-025
- VR-027
- VR-030
- VR-032
- VR-033
- VR-035
- VR-037
- VR-038
- VR-041
- VR-043
- VR-044
- VR-046
- VR-047
- VR-049
- VR-050
- VR-051
- VR-054
- VR-057
- VR-062
- VR-065
- VR-066
- VR-067
- VR-068
- VR-069
- VR-070
- VR-071
- VR-072
- VR-073
- VR-075
- VR-078
- VR-081
- VR-082
- VR-083
- VR-088
- CRA-003
- CRA-013
- CRA-014

Of the property-specific design changes, the following were identified as requiring further review in order to verify compliance with the 100% Design Specifications:

- CAR-023 indicated that geotextile panel placement north of the East Central Hide Pile did not conform to the 100% Design panel layout. The discrepancy was identified on October 12, 1993. The CAR form indicated that the condition was accepted as is, with the requirement that a revised panel layout for the area be submitted. The as-built of the panel layout was submitted by the Contractor on May 5, 1994. The CAR form was not

signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-032 and CAR-47 indicate that mortar used to seal a pipe to the eastern most manhole in former wetland 2A did not contain sand. CAR-032 required the mortar to be removed and replaced, however CAR-042 subsequently required the mortar to be inspected and replaced if only if it had cracked. Corrective actions for this CAR are listed as pending. Roux Associates visually inspected the manhole and found the mortar seals to be adequate. The CAR was not closed or signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-035 indicated that the Contractor backfilled reinforced concrete pipe (RCP) in Wetland 2A with 1.5-2 foot lifts instead of the specified 6-inch lifts. The Contractor was unfamiliar with the specifications. The CAR form indicates the soil was removed and recompacted on November 17, 1993 and documented in PSI report 446-30047-103. The CAR form was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-038 indicated that the Contractor excavated rock in the Wetland 2A area without the Remedial Trust confirming the rock's classification or quantity. The Contractor did not know he was supposed to inform the Remedial Trust before undertaking the extra work. The CAR form indicates the condition was accepted as is. However, the CAR form was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-039 indicated that spilled fill was identified in the Wetland 2A area culvert installation. The Contractor made a constructability decision that did not meet the 100% Design specifications. The CAR form indicates the condition was to be reworked or repaired. On November 8, 1993, the Contractor removed the loose spill fill and compacted it in 6-inch lifts. However, the CAR form was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-042 indicates that dredged soil was not properly handled as hazardous and was placed in the north end of the Aberjona River. The CAR required that the dredged soils be removed and the river bank repaired. The CAR lists corrective actions as pending, however, as-built drawings for the north end of the Aberjona River show correct sloping and materials in the affected area. The CAR was not closed or signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-046 indicated that a 24-inch culvert placed in Wetland 2A was not installed to the proper slope. The reason for the discrepancy was the Contractor installing the 24-inch culvert set one of the manholes too high. The CAR form indicates that the request was accepted as is and that no corrective action was needed. However, the CAR form was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-049 indicated that two manholes in the Wetland 2A area needed to be formed. The Contractor was not familiar with the specification requirements. The CAR form indicates the condition was to be reworked or repaired. On November 15 and 16, 1993, the Contractor formed the manhole bases. However, the CAR form was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CR-050 indicates that the flared end of the culvert at the east end of former wetland 2A was incorrectly placed. The CAR required the culvert to be relocated or the slope to be redesigned to accommodate the TOU access road. The CAR lists corrective actions as pending, however, as constructed, the TOU access road has not experienced slope failure. The CAR was not closed or signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-059 indicated that two manholes in the Wetland 2A area needed steps and lift holes plugged. The Contractor working in the area did not complete the work. The CAR form indicates the condition was to be reworked or repaired. On May 7, 1994, the Contractor removed the top three risers from both the eastern and western manholes and repaired the condition. However, the CAR form was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-067 indicates that fill was placed around a culvert over frozen ground. The CAR required the fill to be removed and properly placed, and lists the corrective action as pending. As constructed, there is no apparent settlement or damage to the culvert. The CAR was not closed or signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- CAR-068 indicates that pipe misalignment caused a manhole to tilt. The manhole was required to be dismantled and re-constructed. The CAR indicates that the manhole was dismantled, but lists reconstruction as pending. Drawings show that the manhole has been reconstructed. The CAR was not closed or signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- VR-006 involved a request to use high density polyethylene (HDPE) pipe in place of fiberglass reinforced plastic (FRP) pipe in the gas collection layer of the East Hide Pile. The Remedial Trust modified the request to specify that the 0.4" slot opening be oriented at 120 degrees with one of the slots facing down on the gas collection stone. The modifications to this variance request were addressed in a subsequent variance—VR-007.

- VR-007 documented a change in the type of pipe used for gas collection from perforated pipe to machine slotted pipe. The VR was modified by the trust, requesting the gas collection blowers be equipped with inlet filters if recommended by the manufacturer. No additional documentation is available, and the blowers are not equipped with filters. Since the time of system installation the blowers have not failed as a result of particulate in the gas stream, Roux Associates has determined that filters were not necessary, and this VR properly was implemented.

- VR-011 involved a request for approval of an alternative wetlands seed mix. The Remedial Trust modified the variance and specified that the modified alternative seed mix be submitted for final review and approval. VR-011 Rev. was unable to be located, but appears, from available descriptions, to include the modified alternative seed mix specifications. Roux Associates researched the request further in the submittal records and found that an alternative wetlands seed mix was submitted to the Remedial Trust on September 20, 1994 and approved September 22, 1994. This date follows the date of VR-011, and thus, demonstrates the alternative wetlands seed mix was, in fact, submitted to and approved by the Remedial Trust.

- VR-017 involved a request for the Remedial Trust to revise the gradation and permeability specifications for the gas collection stone on the East Hide Pile, because some of the gradation and permeability tests results of stone stockpiled on-Site did not meet the specifications. The variance form indicates the Remedial Trust made an exception and accepted the stone that did not meet the gradation and permeability specifications, but did not revise the gas collection stone design specifications.

- VR-023 involved a request to include a vendor's regulator with the vendor's air controller, as specified in the 100% Design. The vendor's air regulator filtered particles down to 35 microns, while the design specifications call for filtration down to 5 microns. The variance request form indicates the Remedial Trust modified the variance and accepted the regulator and related change in filter particle size.

- VR-029 involved a request to substitute Hancor HDPE Hi-Q pipe for perforated FRP pipe on the north slope of the East Hide Pile. The Remedial Trust reviewed the variance request and specified that approval was contingent upon submittal of the pipe costs. Roux Associates was unable to find any documentation supporting the submittal of the pipe costs. However, all photographed pipes appear to be HDPE, as identified in corresponding field notes.

- VR-031 indicates that RUST Remedial Services Inc. requested a variation of DSCR-030-R1 to change the method of placement of riprap over 16-ounce geotextile. The riprap placement was to be performed in accordance with Section 02271-3.01(b) of the 100% Design Report specifications. The Remedial Trust and Design Engineers reviewed this variance request and modified the request, but did not approve it. Their modification required testing of the procedures to be conducted prior to approval of the variance request. Based on Roux Associates' research of available records, including Design Engineer Field Books and Quality Assurance Documents, no evidence was identified that the required testing was conducted or that this design modification was implemented on the Site. Therefore, the tasks discussed in this variance request do not affect the integrity of the cover.

- VR-034 involved a request for a three foot minimum overlap of geocomposite over geotextile for hide pile toe drains. The variance was proposed to improve construction methods. The Remedial Trust and Design Engineers reviewed this variance request and modified the request, but did not approve it. Their modification required screws be installed a minimum of every three feet. Roux Associates reviewed relevant field inspection reports and confirmed the geotextile and geocomposite were in compliance

with the specifications. Furthermore, photos of the toe drains corroborate that screws were installed appropriately.

- VR-036 involved a request to reduce the Continuous Emissions Monitoring System (CEMS) operation and maintenance. Reducing the operation and maintenance time would consequently reduce costs. The Remedial Trust and Design Engineers reviewed this variance request and modified the request, but did not approve it. Their modification required the CEMS be operational by February 1995. Roux Associates conducted extensive research to determine whether the CEMS was operational by February 1995 and concluded that the available documentation is insufficient in proving the CEMS was operational by that date. However, Roux Associates has also concluded that the request was a financial management issue, and as such, had no technical implications for whether the CEMS was properly constructed.

- VR-039 involved a request to modify header piping in the gas collection system to accommodate relocation of Vaults 1 and 2. The Remedial Trust and Design Engineers reviewed this variance request and modified the request, but did not approve it. Their modification required solid piping to be installed on the side of each vault after the butterfly valve. Roux Associates reviewed relevant photos of the vaults and confirmed that solid piping was, in fact, installed on the side of each vault after the butterfly valve.

- VR-040 requested that pressure testing not be required for gas collection piping because it was not intended to be air-tight. The specifications were modified by the VR to eliminate the need to pressure test slotted pipe, but still require pressure testing of un-slotted header pipe. The VR was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- VR-048 involved a request to hold a 3H:1V grade on the southwest side of the East Hide Pile, moving the limit of the cover to the east an estimated 10 feet. The Remedial Trust responded that 3H:1V should be the minimum slope steepness and that the slope should not be steeper than 3H:1V. Furthermore, the Remedial Trust specified in VR-048 Rev. that the toe drain on the slope should be installed in its original location. Roux Associates confirmed the toe drain was, in fact, installed in its original location, as detailed in the as-built drawings for the East Hide Pile.

- VR-056 involved a request to modify the geocomposite butt seam method. The Remedial Trust modified the variance and specified the usage of six-ounce geotextile and no melting damage to that geotextile. Based on relevant geotextile inspection reports, Roux Associates has concluded all geotextile on the subject property was inspected appropriately by the Remedial Trust and found to be in compliance.

- VR-060 required modification to the CEMS to be provided by DataTest because the proposed system did not conform with the 100% design requirements. Subsequent to this VR a different CEMS was designed and installed. Because the DataTest CEMS was not included in final construction, VR-060 is not relevant, and does not affect the integrity of the cover.

- VR-061 indicated that changes to the eastern beginning of the north slope drainage swale on the East Hide Pile affected the geomembrane edge. The changes were a result of the easternmost gas collection system vault being deleted. The Remedial Trust modified the variance and specified the changes be documented in the as-built record drawings. Roux Associates subsequently confirmed the geomembrane location, as detailed in the as-built record drawings.

- VR-063 involved a request to leister and bolt the geotextile/geocomposite seam along the eastern edge of the East Hide Pile. The Remedial Trust modified the variance to specify seaming over a French drain in the area, provided the metals screws were placed not to damage adjacent geomembrane. Existing field notes from December 1994 document no screws were put in the geosynthetic materials in a damaging fashion.

- VR-077 involved a request for polyfelt 16-oz. geotextile to be accepted with a minimum apparent opening size (AOS) of 70. The Remedial Trust modified the request and specified that geotextile with a minimum AOS of 70 or higher could be placed in upland areas. However, only geotextile with an AOS of 100 or more could be placed as wetland cover. According to the as-built drawings of the East Hide Pile, Roux Associates has confirmed that the geotextile placement on the subject properties is in compliance with this variance request.

- VR-079 indicates that site screened soil would be used in areas where slopes were up to 2.5:1, rather than 8:1 as required by the specifications. The VR was amended to reference the specification section, and provide additional justification for the approval. The VR was not signed completely by the design engineer, which appears to be an administrative discrepancy that does not affect the integrity of the cover.

- Following the construction of the cover, the gravel access road to the TOU building was paved. Maverick has reported that the pavement consists of a 2-inch binder course and a 1½ inch finish course for a total thickness of 3½ inches. Since this pavement was constructed above the finished cover, no testing or as-built surveys were prepared. This pavement did not alter the completed cover.

- Following the construction of the cover on the West Hide Pile, an area on the east side of the hide pile eroded during a major storm. The washed out area was repaired through the leveling of the remaining cover soil, installation of geotextile over the re-graded soil, and filling of the area with a 16-inch thick layer of stone. The stone used was a mixture of 1 ½ inch stone and rip rap. The repair formed a drainage swale on the east side of the hide pile, as shown on Record Drawings C-30 and C-33.

Four additional variance requests (VR-022, VR-028, VR-045, and VR-052) were submitted to the Remedial Trust for approval. However, all four of the requests were rejected by the Remedial Trust, and were not implemented on the subject properties.

Furthermore, seven CRAs (CRA-004, CRA-005, CRA-008, CRA-009, CRA-012, CRA-013, CRA-014 and CRA-016) were submitted to the Remedial Trust for application on the subject properties. CRAs 004, 005, 009, and 016 were rejected by the Remedial Trust, and thus, not implemented on the subject properties. CRAs 008, 012, and 013 were approved by the Remedial Trust. CRA-014 could not be located within the Industri-Plex Site files.

Additional details and documentation of property-specific design changes are located in **Appendix C**.

9.0 QUALITY ASSURANCE OBSERVATION AND TESTING

Construction documentation includes daily field reports and weekly reports to the Remedial Trust. Inspection field diaries were also prepared, and photographs were taken on a regular basis throughout construction. The Golder reports and diaries are not included in this document, but are available for review at Golder's Manchester, New Hampshire office.

9.1 Decommissioning

Wells and piezometer abandonment operations were conducted under intermittent field observation by Golder as a representative of the Remedial Trust. The well decommissioning observations included:

- Verifying the submitted method and equipment to seal the well;
- Verifying the well depth and depth drilled;
- Verifying the diameter of overdrill;
- Verifying the grout mix and volume used; and
- Verifying the final concrete cap.

A report of well decommissioning for the three monitoring wells (OW-31, OW-32, and OW-36), three previously unidentified wells (UID-22, UID-23, and UID-24), and five previously unidentified boreholes (BH-9 through BH-13) located on the property was prepared by Maher. The individual decommission logs are presented in **Appendix E**. Roux Associates reviewed the reports for conformance with the decommissioning procedures. Based on the well decommissioning records prepared by Maher, the wells were decommissioned in conformance with the 100% Design Report specifications.

Decommissioning of underground concrete tanks, steel tanks, abandoned pipelines, vaults or pits, concrete slabs, above ground steel tanks, gas pumps, above ground structures, and the features listed on the decommissioning plan, sheet 11-5 of the 100% Design Report were intermittently observed by Golder as a representative for the Remedial Trust. These features were decommissioned as part of the RTC cover installation and are addressed in the "Final Report on RTC Cover Certification" dated April 1998 by Golder.

9.2 Compacted Fill

Field moisture-density tests were generally performed at least once per 5,000 square feet per lift using a Troxler Model 3440 Nuclear Density gauge. Golder periodically monitored the soil testing operations performed by PSI. Failing tests were retested. During 1993 to 1994 the Contractor performed soil moisture density tests as quality control testing. The QC testing was performed by Express Geotesting, Concord, Massachusetts.

9.3 Subgrade Preparation

Subgrade preparation was inspected by Golder or PSI and the Contractor prior to geotextile deployment. A subgrade inspection form was prepared by Golder, PSI, or the Contractor for areas in which deployment would take place. Subgrade inspection forms are provided in **Appendix I.1**.

9.4 Permeable Cover

Geotextile was deployed over the prepared subgrade and seamed. The seams were inspected by Golder or PSI and the Contractor to verify the connection. A geotextile seam inspection form was prepared by Golder, PSI, or the Contractor. Geotextile seam inspection forms are provided in **Appendix I.2**.

Cover soil was placed as permeable cover over the geotextile in accordance with the 100% Design Report, and was nominally compacted by the placing equipment. No inspection or testing was required according to the 100% Design Report. Surveyors verified the cover thickness prior to placing topsoil or gravel. Topsoil, soil amendments, and seeds were then added, and the seed germinated with rainfall or water applied from water trucks. The quality of vegetative cover was evaluated. Erosion control matting was utilized in areas where seed did not germinate well.

9.5 Impermeable Liner Installation

Material used in construction of the drainage swale impermeable cover consisted of a 60-mil thick HDPE geomembrane liner. The HDPE was manufactured by NSC at NSC's Galesburg, Illinois facility.

The geomembrane liner installer for the project was NSC located in Reno, Nevada.

During deployment of the geomembrane liner panels the following services were provided by Golder personnel:

- Measurement of the panel thickness;
- Confirmation of panel overlap;
- Visual observation of overall sheet quality; and
- Assignment of a unique identification number to each panel deployment.

A nominal overlap of 6 inches was maintained between adjoining panels. The average panel thickness was determined by averaging five measurements made along each of the leading edge and trailing edge. A summary of Golder's deployment observations is presented in **Appendix H.5.2.**

Trial seams were made by each welding apparatus at the start of each day, and at least once every five hours while seaming. Sample coupons were cut from each end of the trial seam and tested in the peel and shear test modes using a calibrated tensiometer supplied by NSC.

If a trial seam failed the field testing, the welder and welding apparatus associated with the failing trial seam were not allowed to weld on the geomembrane liner until a passing trial seam had been made in accordance with the 100% Design Report specifications. A summary of the trial seam results is presented in **Appendix H.5.3** and **H.5.4.**

The geomembrane liner panel seaming process proceeded concurrently with the panel deployment. The majority of the seams were made using a dual, hot-wedge fusion welding apparatus. Repairs and some of the butt-seams between panels were made using an extrusion welding apparatus. The seaming operations were observed and documented by Golder personnel. The entire length of all seams, patches, or other repairs were observed and documented either during or shortly after completion. A summary of seaming operations, fusion and extrusion welds, is presented in **Appendix H.5.5** and **H.5.6**.

Samples for destructive testing were obtained from the seams of the 60-mil geomembrane liner system at an average frequency of at least one destructive test sample for each 500 feet of

welding for each seaming apparatus. The test locations were selected by Golder personnel based on either completion of approximately 500 feet of welding or by observations of the welded seams. Destructive samples were tested off-Site by Golder Construction's Geosynthetic Laboratory.

Ten test coupons were cut from each destructive test sample. Five coupons were tested for adhesion (peel test mode) and five coupons were tested for bonded seam strength (shear test mode). In the event that a destructive test sample failed, the path of the welder was traced in both directions from the location of the failed test sample and the seam was re-sampled and retested at intervals that generally ranged from 10 to 20 feet until the failed destructive test was bounded in both directions by passing test samples. The section of seam between the passing test samples were then reconstructed between the test samples.

All nondestructive seam continuity testing was performed by NSC personnel and observed by Golder personnel. Three types of non-destructive testing were used for this project.

- Vacuum box testing on extrusion welds;
- Air pressure testing on dual hot wedge fusion welds; and
- Electric spark testing on extrusion welds used particularly around the vaults.

A vacuum box is a rigid wall box with a clear Plexiglas top and neoprene gasket around the bottom of the box that acts as a seal between the box and the HDPE liner. Vacuum box testing consisted of:

- Applying a soapy water solution to the seam;
- Placing the vacuum box over the seam;
- Applying a vacuum at least two to four pounds per square inch (psi) to the inside of the box for 10 seconds; and
- Observing the seam for bubbles, indicating a discontinuity in the seam.

Air pressure testing consisted of:

- Sealing off of the air channel between the inside and outside tracks of the fusion weld;
- Inserting a needle with a pressure gauge attached into the air channel;
- Using an air compressor, inflating the air channel to between 25 to 30 psi; and
- Observing the air pressure gauge over a period of 5 minutes to see if it maintains minimum pressure.

Electric spark testing consisted of:

- Embedding a copper wire in the extruded seam;
- Charging the embedded wire with a high voltage;
- Passing a brass bristled brush from the test unit over the entire seam length; and
- Observing an audible sound from the unit or a spark at any point of leakage where the current in the wire grounds to the brass brush.

Defects in the geomembrane liner were assigned unique identification numbers and were located and marked in the field by Golder personnel for repair. The defects were repaired and non-destructively tested by NSC in accordance with the 100% Design Report specifications.

9.6 Geocomposite Drainage

Geocomposite provided for drainage above the geomembrane in the impermeable cover on the East Hide Pile. A geocomposite seam inspection form was prepared by Golder, PSI, or the Contractor for geocomposite seams. Geocomposite forms are provided in **Appendix I.3**.

9.7 Geogrid Reinforcing

Geogrid was deployed for use in the permeable cover for securing the cover soil veneer on the West Hide Pile where slopes were steeper than 33 percent. A geogrid inspection form was prepared by Golder, PSI or the Contractor for seaming the geogrid together. Geogrid inspection forms are provided in **Appendix I.4**.

9.8 Manholes and Culverts

Pre-cast reinforced concrete culverts, outlet control structures, drain inlets and trench drains were installed as part of the Remedial Action to redirect surface and stream flows. Golder

intermittently observed construction of these concrete features. Alignment and elevation of culverts were verified by survey. Golder inspections of pre-cast concrete structures consisted of:

- Observing the material dimensions and condition;
- Confirming the joint connections; and
- Confirming joint or void mortaring.

Part of the Remedial Design required cleaning and removing sediments that collected in existing culverts. Culverts to be cleaned were located in the Atlantic Avenue drainway.

9.9 Seeding and Wetland Vegetation

Calculations for soil loss, based on the United States Department of Agriculture (USDA) Soil Less Equation, verify assumptions of the topsoil type, anticipated rainfall, vegetative cover type, and slope steepness are still valid with a calculated loss of less than 2 tons per acre per year. Erosion control matting was installed as a temporary measure to supplement the vegetated cover when the remaining growing season was too short to establish protective vegetative growth.

10.0 RECORD DRAWINGS

Based on the Survey Control (Section 5.0) established for the Industri-Plex Site, Record Drawings of the as-built conditions were established for the soil, sediment and air remedies constructed at the Site, and certified by a Massachusetts Land Surveyor (Meridian Land Services, Inc.). The Record Drawings for this property at the Site are included in Attachment 1.

The Record Drawings include an elaborate survey network and extensive details on the horizontal and vertical locations of the various protective covers installed for the soil, sediment and air remedies. These details may aid in the future monitoring and management of the remedy, and Institutional Controls/Grant of Environmental Restrictions for the Site. The Record Drawings also illustrate the Institutional Controls/Grant of Environmental Restrictions boundaries denoted as Class A, B, C and D Lands.

Where located in Class C lands, existing concrete structures such as concrete pads, stairways, ramps, and loading docks remained in-place as an equivalent cover. These structures are similar to cover types 4, paved equivalent cover, and 5, building equivalent cover. However, because they were not specifically identified in the 100% Design Report, they have not been identified as a specific equivalent cover type herein.

The Record Drawings have plan views and points charts. The plan view shows grid points and intermediate point locations. The points chart shows elevation data collected at each point shown on the plan view. The plan views include contour lines for subgrade and finish grade. A summary of the separate sections of the Record Drawings is as follows:

- Sheet C-29: West Hide Pile Specific Property Location;
- Sheet C-30: West Hide Pile Boundary Lines, Land Classifications, Easements and As-Built Drainage;
- Sheet C-31: West Hide Pile Record Points, Topography & Limits of Engineer Cover;
- Sheet C-32: West Hide Pile Cover Types and Transitions; and,
- Sheet C-33: West Hide Pile Details and Transitions;
- Sheet C-34: Wetlands 1C & Undeveloped Properties Specific Property Location;
- Sheet C-35: Wetlands 1C & Undeveloped Properties Boundary Lines, Land Classifications & Easements;

- Sheet C-36: Wetlands 1C & Undeveloped Properties Record Points, Topography, Drainage & Limits of Engineered Cover;
- Sheet C-37: Wetlands 1C & Undeveloped Properties Record Points Chart;
- Sheet C-38: Wetlands 1C & Undeveloped Properties Cover Types & Transitions;
- Sheet C-39: Wetlands 1C & Undeveloped Properties Details & Transitions.
- Sheet C-40: East Hide Pile Specific Property Location;
- Sheet C-41: East Hide Pile Boundary Lines, Land Classifications, & Easements;
- Sheet C-42: East Hide Pile & Access Road Record Points, Topography, Drainage & Limits of Engineered Cover;
- Sheet C-43: East Hide Pile & Access Road Point Charts;
- Sheet C-44: East Hide Pile & Access Road Cover Types & Transitions;
- Sheet C-45: East Hide Pile Liner Sheet;
- Sheet C-46: East Hide Pile Liner Point Chart;
- Sheet C-47: East Hide Pile & Access Road Cover Types;
- Sheet C-48: East Hide Pile & Access Road Details & Transitions;

11.0 CERTIFICATION

On behalf of the Remedial Trust, Roux Associates certifies that the Resources for Responsible Site Management, Inc., as Trustee for the Industri-Plex Site Custodial Trust (Tax Maps 5-1-1 North and 5-1-1 South) remedial action was completed in compliance with the approved remedial design and work plans, approved design variances, and the Consent Decree. Any exceptions to the design are noted within this Cover Certification Report. Changes to the cover made following construction completion on June 28, 1996 are not addressed in this report. Approved changes to the cover made since that date are documented in the Administrative Record. The Professional Engineer's certification (below) comprises a declaration of his professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it release any other party of their responsibility to abide by contract documents or applicable codes, standards, regulations, and ordinances.

The Professional Engineer's certification is based upon a review of the remedial action documentation. Roux Associates' certification relies upon the accuracy of the as-built survey and record drawings prepared by Meridian and upon the representations made and information provided by the Remedial Trust and its representatives, contractors and consultants involved with the remedial action effort, EPA, and EPA contractors involved with the oversight of the remedial action effort. The Remedial Trust contractors and consultants include CWM, Golder, PSI, NAO, Datatest Industries, and Maverick.

Respectfully Submitted,

ROUX ASSOCIATES, INC.

Glen Gordon, P.E.
Certifying Engineer for Roux Associates, Inc.
MA License No. 41819

Lawrence McTiernan, LSP
Project Principal

Table 1
ISRT Clean Soil Thresholds
in milligrams per kilogram (mg/kg)

Adapted from Table 02223-1

The following table is presented as the clean soil guideline for the Industri-Plex (I-Plex) Site. Metals which are naturally rock-forming compounds may vary from the guideline values on a case by case basis.

Tests	Proposed Threshold Levels for Clean Soil Used at I-Plex				
Volatile Organic (TCL)	Non-detectable (3)			EPA Method	8240
Acid/Base Neutrals (TCL)	Non-detectable (3)			EPA Method	3550/8270/8270
Pesticides/PCBs (TCL)	Non-detectable			EPA Method	3550/8080
Metals - Target Analyte List (TAL) (4)					
Aluminum	<	100,000	mg/kg	EPA Method	3050/6010
Antimony	<	10	mg/kg	EPA Method	3050/6010
Arsenic	<	25	mg/kg	EPA Method	3050/7060
Barium	<	500	mg/kg	EPA Method	3050/6010
Beryllium	<	1	mg/kg	EPA Method	3050/6010
Cadmium	<	10	mg/kg	EPA Method	3050/6010
Calcium	<	50,000	mg/kg	EPA Method	3050/6010
Chromium	<	23	mg/kg	EPA Method	3050/6010
Cobalt	<	20	mg/kg	EPA Method	3050/6010
Copper	<	50	mg/kg	EPA Method	3050/6010
Iron	<	70,000	mg/kg	EPA Method	3050/7420
Lead	<	87	mg/kg	EPA Method	3050/6010
Magnesium	<	10,000	mg/kg	EPA Method	3050/6010
Manganese	<	1,000	mg/kg	EPA Method	3050/6010
Mercury	<	1	mg/kg	EPA Method	3050/7470
Nickel	<	100	mg/kg	EPA Method	3050/6010
Potassium	<	10,000	mg/kg	EPA Method	3050/6010
Selenium	<	20	mg/kg	EPA Method	3050/7740
Silver	<	20	mg/kg	EPA Method	3050/6010
Sodium	<	4,000	mg/kg	EPA Method	3050/6010
Thallium	<	5	mg/kg	EPA Method	3050/7840
Vanadium	<	150	mg/kg	EPA Method	3050/6010
Zinc	<	200	mg/kg	EPA Method	3050/6010
Cyanide	<	10	mg/kg	EPA Method	9010
TPH (Total Petroleum Hydrocarbon)	<	200	mg/kg	EPA Method	418.1

Notes:

1) At any time the Trust may revise this list to include testing for additional constituents which may pose a health threat.

2) TCL = Target Compound List

3) Excludes common laboratory contaminants given in the EPA Region 1 Contract Laboratory Program Data Validation Functional Guidelines.

4) TAL Metals by Inductively Coupled Plasma (ICP) and Atomic Absorption (AA) Methods, Test 6010, except run the following constituents by the following methods: (As) 7060, (Pb) 7420, (SE) 7740, (Th) 7840, (Hg) 7470. The 7000's are "furnace and cold vapor AA" methods.

Table 2
Testing Methods for Soil and Geosynthetics
adapted from Golder's QAPP Table 1-1

7.2 TESTING METHODS	STANDARD	PRECONSTRUCTION FREQUENCY	CONSTRUCTION FREQUENCY
BACKFILL & FILL (Specification Section 02223)			
Backfill and fill tests will be performed by Professional Service Industries, Inc.			
Compacted Fill			
Gradation Test	ASTM D422	1/Source	1/5,000 CY
Plasticity Index	ASTM D4318	1/Source	1/5,000 CY
Standard Compaction	ASTM D698	1/Source	1/5,000 CY
Modified Compaction	ASTM D1557	1/Source	1/5,000 CY
Field Moisture/Density	ASTM D2922	Not Required	9/Lift or 1/100 LF
In-Place Methods	ASTM D1556 or D2167	Not Required	1/Day
Sand Bedding			
Gradation Test	ASTM D422	1/Source	1/5,000 CY
Carbonate Content	ASTM D3042	1/Source	Not Required
SUBANGULAR STONE (Specification Section 02233)			
Subangular stone tests will be performed by Professional Service Industries, Inc.			
AASHTO No. 2, 57, 67			
Gradation Test	ASTM D422	1/Source	1/1,000 CY
Carbonate Content	ASTM D3042	1/Source	Not Required
AASHTO No. 8			
Gradation Test	ASTM D422	1/Source	1/1,000 CY
Carbonate Content	ASTM D3042	1/Source	Not Required
Permeability Test	USCO EM1110-2-1906	1/Source	Not Required
IMPERMEABLE & PERMEABLE COVER FILL (Specification Section 02242)			
Impermeable and permeable cover fill test will be performed by Professional Service Industries, Inc. unless designated with **			
Cover Soil (Select Cover Fill)			
Gradation Test	ASTM D422	1/Source	1/2,000 CY
Plasticity Index	ASTM D4318	1/Source	1/5,000 CY
Direct Shear Test**	Section 02242	1/Source	1/2,000 CY
** Test to be performed by Golder Associates Ltd.			
Top Soil			
Gradation Test	ASTM D422	1/Source	1/2,000 CY
pH Test	ASTM D4972	1/Source	Not Required
Baker Soil Fertility Test**	Section 02242	1/Source	1/2,000 CY
** Test to be performed by Land Management Decisions, Inc.			
WETLANDS SEDIMENT REMEDIATION COVER SOILS (Specification Section 02243)			
Wetland sediment cover soil tests will be performed by Professional Service Industries, Inc. unless designated with **			
Wetland Gravel (Road Structural Fill: Section 02223)			
Gradation Test	ASTM D422	1/Source	1/5,000 CY
Wetland Topsoil (Topsoil: Section 02937)			
Gradation Test	ASTM D422	1/Source	1/5,000 CY
pH Test	ASTM D4972	1/Source	1/5,000 CY
Organic Matter Content	Section 02937, Tbl 2	1/Source	1/5,000 CY
Soil Fertility Test**	Section 02937, Tbl 2	1/Source	1/5,000 CY
** Test to be performed by Land Management Decisions, Inc.			
STREAM SEDIMENT REMEDIATION COVER (Specification Section 02244)			
Stream sediment cover tests will be performed by Professional Service Industries, Inc.			
Gravel/Cobble (Section 02271)			
Abrasion Test	ASTM C535	Not Required	Not Required
Freeze Thaw Test	AASHTO T103	Not Required	Not Required
Specific Gravity	ASTM C127	Not Required	Not Required
Gradation Test-Aggregate	ASTM C136	1/Source	Not Required

Table 2
Testing Methods for Soil and Geosynthetics
adapted from Golder's QAPP Table 1-1

7.2 TESTING METHODS	STANDARD	PRECONSTRUCTION FREQUENCY	CONSTRUCTION FREQUENCY
STONE RIPRAP (Specification Section 02271)			
Stone riprap tests will be performed by Professional Service Industries, Inc.			
Gravel/Cobble (d_{50}=3 inches) (Section 02271)			
Abrasion Test	ASTM C535	Not Required	Not Required
Freeze Thaw Test	AASHTO T103	Not Required	Not Required
Specific Gravity	ASTM C127	Not Required	Not Required
Gradation Test-Aggregate	ASTM C136	1/Source	Not Required
Streambed Sediment Filter and Gabion Rock (d_{50}=6 inches)			
Abrasion Test	ASTM C535	Not Required	Not Required
Freeze Thaw Test	AASHTO T103	Not Required	Not Required
Specific Gravity	ASTM C127	Not Required	Not Required
Gradation Test-Aggregate	ASTM C136	1/Source	Not Required
SUBBASE AND PAVEMENT (Specification Section 02575)			
Subbase and Pavement tests will be performed by Professional Service Industries, Inc.			
Graded Aggregate Base Course			
Gradation Test	AASHTO T11 & T27	1/Source	1/5,000 SY or 1 Day
Compacted Density	AASHTO T180 Method D	1/Source	1/5,000 SY or 1 Day
Abrasion Test*	AASHTO T96	1/Source	1/5,000 SY or 1 Day
Freeze Thaw Test*	AASHTO T103	1/Source	1/5,000 SY or 1 Day
(* as required by MDPW specifications)			
Binding and Wearing Asphalt Courses			
Extraction Test (Plant)	AASHTO T168	Not Required	1/500 Tons
Gradation Test (Plant)	AASHTO T11 or T27	Not Required	1/500 Tons
Density/Stability (Plant)	AASHTO T209, T245, T246, T247	Not Required	1/500 Tons
Max. Theoretical Density	ASTM D2041	Not Required	1/500 Tons
Max. Density - Marshall	AASHTO T209 or T245	Not Required	2/500 Tons
In place Density	ASTM D2950	Not Required	1/100 LF
In place Density (Core)	AASHTO T166	Not Required	1Core/500 SY
In place Thickness (Core)	AASHTO T166	Not Required	1 Core/500 SY
In place Smoothness Test	Section 02575	Not Required	1/100 LF
GEOTEXTILE (Specification Section 02595)			
Geotextile tests will be performed by Golder Construction Services, Inc.			
Non-woven, 6, 10, and 16 ounces/square yard			
Mass Per Unit Area	ASTM D5261	1/100,000 SF	Not Required
Grab Strength	ASTM D4632	1/100,000 SF	Not Required
Trapezoidal Tear Strength	ASTM D4533	1/100,000 SF	Not Required
Burst Strength	ASTM D3786	1/100,000 SF	Not Required
Puncture Strength	ASTM D4833	1/100,000 SF	Not Required
Thickness	ASTM D5199	1/100,000 SF	Not Required
Apparent Opening Size	ASTM D4751	1/100,000 SF	Not Required
GEOMEMBRANE (Specification Section 02597)			
Geomembrane tests will be performed by Golder Construction Services, Inc.			
Textured HDPE			
Thickness	ASTM D5199	1/100,000 SF	Not Required
Density	ASTM D1505	1/100,000 SF	Not Required
Minimum Tensile Properties:	ASTM D638	1/100,000 SF	Not Required
Tensile Strength, Yield			
Tensile Strength, Break			
Elongation at Yield			
Elongation at Break			
Tear Resistance	ASTM D1004 Die C	Not Required	Not Required
Low Temperature Brittleness	ASTM D746 Proc. B	Not Required	Not Required
Dimensional Stability	ASTM D1204	1/100,000 SF	Not Required
Environmental Stress Crack	ASTM D1693	Not Required	Not Required
Puncture Resistance	FTMS 101C Method 2065	Not Required	Not Required
Carbon Black Content	ASTM D1603	1/100,000 SF	Not Required
Carbon Black Dispersion	ASTM D3015	1/100,000 SF	Not Required
Shear Test	ASTM D4437 NSF Mod.	Not Required	1/500 LF
Peel Adhesion (Hot Wedge Fusion Weld)	ASTM D4437 NSF Mod.	Not Required	1/500 LF
Peel Adhesion (Fillet Extrusion Weld)	ASTM D4437 NSF Mod.	Not Required	1/500 LF

Table 2
Testing Methods for Soil and Geosynthetics
adapted from Golder's QAPP Table 1-1

7.2 TESTING METHODS	STANDARD	PRECONSTRUCTION FREQUENCY	CONSTRUCTION FREQUENCY
GEOCOMPOSITE (Specification Section 02598)			
Geocomposite tests will be performed by Golder Construction Services, Inc.			
Geocomposite (TEX-NET TN3002CN)			
Geocomposite Transmissivity @ 500 psf; Gradient = 1	ASTM D4716	1/100,000 SF	Not Required
Geocomposite Transmissivity @ 20,000 psf; Gradient = 1	ASTM D4716	1/100,000 SF	Not Required
Tensile Strength - Net only (prior to lamination)	ASTM D5035	Not Required	Not Required
Tensile Strength - Geotextile only (prior to lamination)	ASTM D4632	Not Required	Not Required
Geocomposite Peel Strength	ASTM D413	1/100,000 SF	Not Required
Density - Net only (prior to lamination)	ASTM D1505	Not Required	Not Required
Carbon Black Content - Net only (prior to lamination)	ASTM D1603	Not Required	Not Required
Thickness - Net only (prior to lamination)	ASTM D5199	Not Required	Not Required
Thickness - Geotextile only (prior to lamination)	ASTM D5199	Not Required	Not Required
Geotextile Mass/Unit Area	ASTM D5261	1/100,000 SF	Not Required
Apparent Opening Size - Geotextile only (prior to lamination)	ASTM D4751	Not Required	Not Required
GEOGRID (Specification Section 02599)			
Geocomposite tests will be performed by Golder Construction Services, Inc.			
Geocomposite (TEX-NET TN3002CN)			
Open Area	COE CW 02215-89	1/100,000 SF	Not Required
Thickness:	ASTM D5199	1/100,000 SF	Not Required
Ribs			
Junctions			
Long Term Design Load (MD)	ASTM D5262	Not Required	Not Required
Flexural Rigidity	ASTM D1388	1/100,000 SF	Not Required
Geogrid Rib Tensile Strength	GRI GG1	1/100,000 SF	Not Required
Junction Node Strength	GRI GG2	1/100,000 SF	Not Required
Strength			
Efficiency			
Density	ASTM D1248	1/100,000 SF	Not Required
Carbon Black Content	ASTM D1603	1/100,000 SF	Not Required
WETLAND MITIGATION (Specification Section 02937)			
Wetland sediment cover soil tests will be performed by Professional Service Industries, Inc. unless designated with **			
Wetland Cover Soil			
Gradation Test	ASTM D422	1/Source	1/Acre/Lift
Plasticity Index	ASTM D4318	1/Source	1/Acre/Lift
Standard Compaction	ASTM D698	1/Source	1/Source
Flexible Wall Perm Test **	ASTM D5084	1/Source	1/Acre/Lift
Field Moisture/Density	ASTM D2922	Not Required	1/10,000 SF
** Test will be performed by Golder Associates, Inc.			
CAST IN PLACE CONCRETE (Specification Section 03300)			
Cast in place concrete tests will be performed by Professional Service Industries, Inc.			
Compression Test Cylinders	ASTM C39	Not Required	4/Class/100 CY to
Making of Test Cylinders	ASTM C31	Not Required	4/Class/5,000 SF of
Testing of Aggregate	ASTM C33	Not Required	Conrete Place As

Notes:
QAPP = Quality Assurance Project Plan
ASTM = American Society for Testing and Materials
CY = cubic yard
LF = linear feet
AASHTO = American Association of State Highway and Transportation Officials
Tbl = Table
MDPW = Massachusetts Department of Public Works
SF = square foot
PSF = pounds per square foot

Table 3
Summary of Abbreviations
Property-Specific Cover Certification Reports
Industri-Plex Site

Mapping Location:

@	=	at
AAD	=	Atlantic Avenue Drainway
AL	=	Above Geotextile
AP	=	Above Pipe
BECO	=	Boston Edison Company right of way
BLDG	=	Building
BRD	=	Bradford
BSG	=	Below Subgrade
BTOB	=	Below Top of berm
CO	=	Company
COMM	=	Commerce (Way Extension)
DET	=	Detention Basin
E	=	East
EEOS	=	East End of Seam
ECHP	=	East Central Hide Pile
EXT	=	Extension
HUB	=	Hubbardston
MID	=	Middle
N	=	North
PLYM	=	Plymouth
PRES	=	Presidential (Way Extension)
REV	=	Revere
S	=	South
SEOS	=	South End of Seam
SG	=	Subgrade
STK	=	Stock (yard)
UGT	=	Under Ground Tank
UTIL	=	Utility
W	=	West
w/	=	with
WEOS	=	West End of Seam
WIL	=	Wilmington
WOB	=	Woburn

Cover Materials:

GB	=	Gravel Borrow (Subbase)
LL	=	Liquid Limit
MOIST	=	Optimum Moisture Content
NP	=	Non-Plastic
PCF	=	Pounds per Cubic Foot
PL	=	Plastic Limit
PSI	=	Pounds per Square Inch
PROC	=	Processed
SCRND	=	Screened
SD	=	Sand
SS	=	Site Soil
TRI	=	(Bardon) Trimount

INDUSTRI-PLEX SITE
OU-1 COVER CERTIFICATION REPORT
LOCUS OF TAX MAP LOT 5-1-1 (AKA IC-27)
RESOURCES FOR RESPONSIBLE SITE MANAGEMENT, INC., AS TRUSTEE FOR THE INDUSTRI-PLEX SITE CUSTODIAL TRUST (AKA WEST HIDE PILE)
RECORD DRAWINGS
WOBURN, MASSACHUSETTS
AUGUST 8, 2000

REFERENCE PLANS:

1. "REGIONAL TRANSPORTATION CENTER– WOBURN, MASSACHUSETTS" ALTERNATE COVER DESIGN– ISSUED FOR EPA/DEP APPROVAL, DATE ISSUED: MAY 16, 1995 LATEST ISSUE: JULY 26, 1996, BY VANASSE HANGEN BRUSTLIN, INC., WATERTOWN, MA

2. "INDUSTRIAL–PLEX SITE – WOBURN, MASSACHUSETTS – 100% DESIGN REPORT, PART I – REMEDIAL WORK FOR SOIL, SEDIMENTS AND AIR– VOLUME 7 OF 8", PREPARED BY GOLDER ASSOCIATES, MT. LAUREL, N.J., APRIL 25, 1992.

3A. "SUBDIVISION PLAN OF LAND IN WOBURN – PERFORMED BY VANASSE HANGEN BRUSTIN, INC. SURVEYORS – APRIL 6, 1999", SCALE 1" = 80', CERT. OF TITLE NO. 215236 BOOK 1206 PAGE 86, RECORDED AS PLAN NO. 7312–2 ON JANUARY 18, 2000 AT SOUTH REGISTRY DISTRICT OF MIDDLESEX COUNTY

3B. "SUBDIVISION PLAN OF LAND IN WOBURN – PERFORMED BY MASSPORT SURVEY UNIT – OCTOBER 21, 1996", SCALE 1"=300', CERT. OF TITLE NO. 209396 BOOK 1188 PAGE 186, RECORDED AS PLAN NO.7312–Z ON JANUARY 18, 2000 AT SOUTH REGISTRY DISTRICT OF MIDDLESEX COUNTY.

3C. "PLAN OF EASEMENT IN – WOBURN, MASSACHUSETTS – TO BE CONVEYED TO BOSTON EDISON COMPANY." SCALE 1"=100' DATED MARCH 21, 1970 BY SCHOFIELD BROTHERS, INC. (RECORDED IN SRDMC AS PLAN #731 OF 1970).

4. "INDEX PLAN OF – LAND COURT SUBDIVISION – IN – WOBURN, MA" PREPARED FOR THE NORTHEAST REGIONAL TRANSPORTATION CENTER BY MASSACHUSETTS PORT AUTHORITY, DATED OCTOBER 21, 1996, SHEETS 1–6. LCC 7312.

5. "THE COMMONWEALTH OF MASSACHUSETTS – DEPARTMENT OF HIGHWAYS – PLAN AND PROFILE OF – ROUTE I–93 INTERCHANGE – IN THE CITY OF – WOBURN – MIDDLESEX COUNTY", SHEETS 18–23 OF 107, SCALE 1"=40' , PREPARED BY VHB, INC. PROJECT NO. 072310.

6. "PLAN OF LAND IN – WOBURN, MA. – SHOWING REDIVISION OF LOTS – A2, A3 & A4", SCALE 1" = 80' DATED DECEMBER 30, 1986. PREPARED FOR AUGUSTINE P. SHEEHY BY GHR ENGINEERING ASSOCIATES, INC. RECORDED AT MIDDLESEX REGISTRY OF DEEDS, SOUTHERN DISTRICT CAMBRIDGE, MASS. ON FEB. 12, 1987 AS PLAN NO. 200, DOC. 246 BOOK 17860, PAGE 528.

7. "THE COMMONWEALTH OF MASSACHUSETTS – PLAN OF ROAD – IN THE CITY OF – WOBURN – MIDDLESEX COUNTY – ALTERED AND LAID OUT AS A STATE HIGHWAY – BY THE DEPARTMENT OF HIGHWAYS", SCALE 1" = 40' DATED MAY 21, 1997, ON FILE AT THE COMMONWEALTH OF MASSACHUSETTS, DEPARTMENT OF HIGHWAYS AS LAYOUT NO. 7376, PROJECT FILE NO. 072310.

8. "SUBDIVISION – PLAN OF LAND – IN WOBURN, MASS.", SCALE 1" = 100' DATED JULY 8, 1997 AND REVISED SEPT. 18, 1997. PREPARED FOR JAMES BOND REALTY TRUST BY EDWARD J. FARRELL. RECORDED AT MIDDLESEX REGISTRY OF DEEDS, SOUTHERN DISTRICT CAMBRIDGE, MASS. ON OCT 6, 1997 AS PLAN NO. 1065, DOC. NO. 86, BOOK 27743 PAGE 419.

SURVEY CONTROL NETWORK POINTS

POINT #	NORTHING (FEET)	EASTING (FEET)	ELEVATION (FEET)	DESC.
8	555829.94	696197.41	88.93	PIN/C(s)
9	554787.93	695334.79	93.29	MAGNL(s)
117	554935.71	696605.05	119.44	I.PIN(f)
118	554997.69	696744.31	124.49	I.PIN(f)
119	554977.42	696743.93	125.72	I.PIN(f)
120	556005.46	696613.05	95.27	C.B.(f)
128	555312.88	696740.29	115.51	I.PIN(f)
129	555279.16	696890.59	117.47	I.PIN(f)
130	555370.20	696889.50	118.61	C.B.(f)
132	554847.71	694915.95	78.43	I.PIN(f)
133	555058.90	695126.18	96.01	P.K.(f)
134	555102.46	695256.34	96.55	I.PIN(f)
135	555142.01	695222.63	90.28	P.K.(f)
157	555902.41	696284.78	90.59	C.B.(f)
216	553575.07	697396.19	72.34	DISK
218	554038.23	696400.64	91.30	I.PIN(s)
219	554833.75	696498.97	113.51	DISK
220	554921.67	695784.06	73.06	D.H.(f)
221	554863.96	695486.38	98.35	P.K.(f)
245	553801.79	695102.81	70.74	PIN/C(s)
301	552991.99	695650.71	67.70	G.B.(f)
302	552983.08	695726.35	68.00	G.B.(f)
303	552824.40	695720.82	66.92	G.B.(f)
751	550314.48	698866.23	58.42	G.B.(f)
752	550363.63	698811.51	57.52	G.B.(f)
754	550089.43	697819.49	53.51	G.B.(f)
755	550155.77	697925.27	54.70	G.B.(f)
756	550192.19	698080.56	56.08	PIN/C(f)
828	552989.66	695204.98	72.68	RRSPK(S)
831	555171.27	696067.95	92.16	PIN/C(s)
832	555602.29	695870.66	86.06	P.K.(s)
833	555464.48	695350.57	78.24	PIN/C(s)
834	555080.77	695290.39	96.82	PIN/C(s)
850	553166.01	695458.74	66.79	P.K.(f)
857	554268.42	694914.00	73.19	PIN/C(S)
858	553407.27	694721.18	73.66	P.K.(S)
871	553005.63	694989.59	75.27	P.K.(s)
872	553190.49	694871.47	74.38	P.K.(s)
873	553293.14	694886.21	73.74	PIN/C(s)
874	553152.45	695225.83	72.96	P.K.(s)
887	553569.05	697762.19	74.67	G.B.(s)
888	553762.69	698088.18	75.46	G.B.(F)
889	553895.58	698391.10	74.41	PIN/C(s)
890	553542.21	698649.64	72.97	G.B.(S)
891	552879.28	699142.48	69.34	PIN/C(s)
892	552674.56	699013.57	68.58	G.B.(S)
893	552536.04	698702.70	69.67	G.B.(S)
894	553002.10	698412.19	69.40	MAGNL(s)
895	552730.89	697787.70	67.50	MAGNL(s)
919	554648.09	696120.30	106.02	PIN/C(s)
920	553826.01	695995.76	79.40	PIN/C(s)
921	553411.21	696193.36	78.92	PIN/C(s)
922	552932.88	696420.08	71.72	DISK
923	553120.20	696816.46	72.78	DISK
924	553462.61	697331.77	68.39	DISK
925	553842.55	697009.22	94.88	PIN/C(s)
926	554203.87	697060.28	79.00	DISK
927	553812.75	696737.39	107.69	PIN/C(s)
928	552561.74	696815.28	88.15	PIN/C(s)
929	552790.55	697119.09	71.75	PIN/C(s)
930	553018.55	697429.53	68.02	DISK
931	554521.49	694626.27	87.39	D.H.(f)
932	554421.26	694348.31	101.39	G.B.(f)
933	554251.87	694364.55	90.95	PIN/C(s)
934	553498.56	694623.81	69.94	PIN/C(s)
935	553378.01	694317.96	72.10	PIN/C(s)
936	553290.51	694245.09	81.03	PIN/C(s)
937	553114.85	694221.58	97.94	PIN/C(s)
938	552836.93	694953.72	80.60	DISK
944	550614.66	697637.80	N/A	G.B.(F)
945	554503.77	694825.96	74.68	P.K.(f)
947	552692.72	695376.15	65.92	DISK
948	552343.09	695555.77	63.57	G.B.(s)
949	552438.47	696030.92	71.73	DISK
950	552035.73	696313.53	68.40	G.B.(s)
951	551631.65	697151.14	65.87	DISK
952	551433.89	697800.32	73.68	DISK
953	551087.91	698466.50	63.64	DISK
954	550919.29	698709.73	60.45	DISK
955	551532.44	698410.23	63.71	DISK
956	551861.31	698260.16	65.21	DISK
957	552364.26	698003.18	67.73	G.B.(F)
960	554579.37	695677.56	96.32	G.B.(s)
961	554434.15	695071.84	85.91	G.B.(s)
962	553960.20	695295.87	79.76	G.B.(s)
963	553612.09	695462.70	78.81	DISK
964	553810.04	696003.71	79.67	G.B.(s)
965	553424.46	696186.34	79.67	G.B.(s)
966	553373.67	695576.30	77.68	DISK
967	553108.66	695695.24	76.92	DISK
968	552790.10	695786.11	73.69	DISK
971	554878.15	696698.61	129.11	PIN/C(s)
972	555073.02	696822.69	125.79	PIN/C(s)
973	555324.98	697186.40	117.15	PIN/C(s)
974	555328.29	697548.91	96.63	G.B.(f)
975	555468.38	697809.50	92.45	DISK
976	555640.49	697867.72	72.09	G.B.(s)
977	555411.42	697997.77	85.47	PIN/C(s)
978	555238.37	697940.64	70.49	G.B.(S)
979	555115.28	698015.18	87.78	PIN/C(s)
980	554928.03	698008.18	80.93	PIN/C(s)
981	554828.02	697781.52	67.51	G.B.(S)
982	554608.27	697651.96	76.95	DISK
983	554337.91	697697.91	77.28	MAGNL(s)
984	554073.15	697638.96	76.58	PIN/C(s)
985	554090.37	697850.88	75.15	PIN/C(s)

SURVEY CONTROL NETWORK POINTS

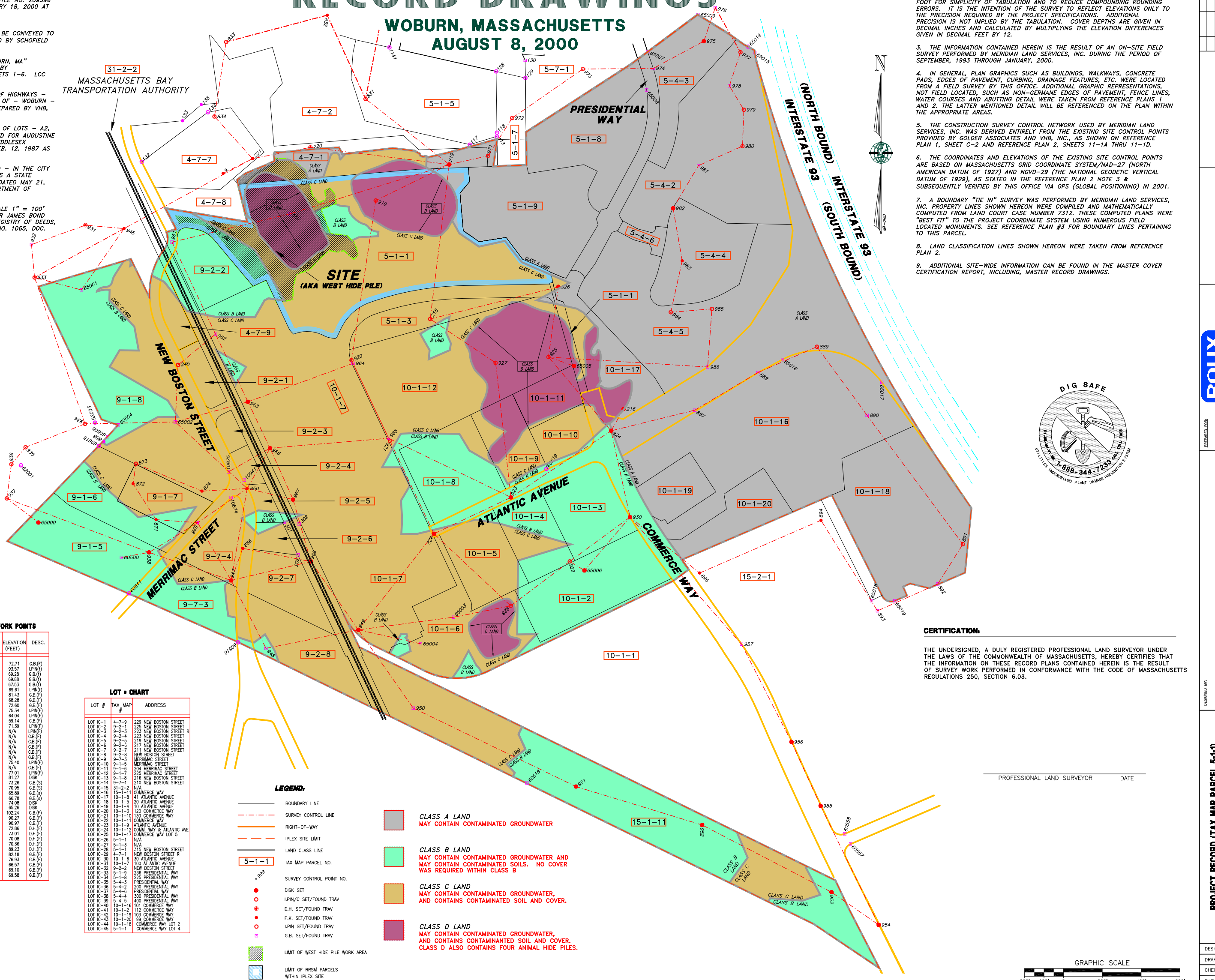
POINT #	NORTHING (FEET)	EASTING (FEET)	ELEVATION (FEET)	DESC.
986	553791.19	697828.87	72.71	G.B.(F)
1141	555436.21	696190.95	93.57	I.PIN(f)
10874	553119.80	695375.82	69.28	G.B.(f)
10875	553250.96	695361.95	69.88	G.B.(f)
10941	553209.59	695443.61	67.53	G.B.(f)
52003	553504.76	694675.40	69.61	I.PIN(f)
60500	552811.04	694811.44	81.43	G.B.(F)
60504	553493.08	694795.99	68.28	G.B.(F)
60505	553431.74	694740.48	72.60	G.B.(F)
60511	552626.22	694850.12	75.34	I.PIN(F)
60516	552373.95	695412.38	64.04	I.PIN(F)
60518	551650.24	696899.13	59.14	C.B.(F)
60519	553266.67	696998.63	71.39	I.PIN(F)
60545	550535.42	698962.56	N/A	I.PIN(F)
60549	550646.41	699172.79	N/A	G.B.(F)
60551	550588.82	697583.34	N/A	G.B.(F)
60552	550611.64	697561.55	N/A	G.B.(F)
60557	551335.71	698564.07	N/A	C.B.(F)
60558	551388.23	698534.25	N/A	G.B.(F)
60615	553385.09	694695.50	75.40	I.PIN(F)
60950	550705.00	699289.45	N/A	G.B.(F)
62001	553285.48	694294.18	77.01	I.PIN(F)
65000	552990.73	694384.08	81.27	DISK
65001	554187.89	694605.57	73.26	G.B.(S)
65002	553508.43	695088.74	70.95	G.B.(S)
65003	552503.26	696521.21	65.89	G.B.(S)
65004	552366.69	696350.85	66.78	G.B.(s)
65005	553796.88	697140.89	74.08	DISK
65006	552744.10	697194.90	65.26	DISK
65007	555414.66	697522.06	102.24	G.B.(F)
65008	555217.20	697514.54	90.27	G.B.(F)
65009	555605.36	697779.98	90.97	C.B.(F)
65010	555803.93	697977.42	72.86	D.H.(F)
65011	555708.75	697858.52	73.01	D.H.(F)
65012	555702.94	697888.20	70.08	D.H.(F)
65013	555745.19	697945.39	70.36	D.H.(F)
65014	555440.08	698036.86	89.23	G.B.(F)
65015	555409.32	698071.85	82.18	G.B.(F)
65016	553829.73	698214.01	76.93	G.B.(F)
65017	553712.31	698725.05	66.57	G.B.(F)
65018	552588.82	698672.03	69.10	G.B.(F)
65019	552588.11	698792.15	69.58	G.B.(F)

RESTRICTED AREAS BY CLASSES OF LAND

CLASS OF LAND	DESCRIPTION
A	MAY CONTAIN CONTAMINATED GROUNDWATER
B	MAY CONTAIN CONTAMINATED GROUNDWATER, AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B.
C	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.
D	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

LOT # CHART

LOT #	TAX MAP #	ADDRESS
LOT IC-1	4-7-9	229 NEW BOSTON STREET
LOT IC-2	9-2-1	225 NEW BOSTON STREET
LOT IC-3	9-2-3	223 NEW BOSTON STREET R
LOT IC-4	9-2-4	223 NEW BOSTON STREET
LOT IC-5	9-2-5	219 NEW BOSTON STREET
LOT IC-6	9-2-6	217 NEW BOSTON STREET
LOT IC-7	9-2-7	211 NEW BOSTON STREET
LOT IC-8	9-2-8	NEW BOSTON STREET
LOT IC-9	9-7-3	MERRIMAC STREET
LOT IC-10	9-1-5	MERRIMAC STREET
LOT IC-11	9-1-6	204 MERRIMAC STREET
LOT IC-12	9-1-7	225 MERRIMAC STREET
LOT IC-13	9-1-8	216 NEW BOSTON STREET
LOT IC-14	9-7-4	210 NEW BOSTON STREET
LOT IC-15	31-2-2	N/A
LOT IC-16	15-1-11	COMMERCE WAY
LOT IC-17	10-1-8	41 ATLANTIC AVENUE
LOT IC-18	10-1-5	20 ATLANTIC AVENUE
LOT IC-19	10-1-4	10 ATLANTIC AVENUE
LOT IC-20	10-1-3	120 COMMERCE WAY
LOT IC-21	10-1-10	130 COMMERCE WAY
LOT IC-22	10-1-11	COMMERCE WAY
LOT IC-23	10-1-9	ATLANTIC AVENUE
LOT IC-24	10-1-12	COMM. WAY & ATLANTIC AVE
LOT IC-25	10-1-17	COMMERCE WAY LOT 5
LOT IC-26	5-1-1	N/A
LOT IC-27	5-1-3	N/A
LOT IC-28	5-1-1	315 NEW BOSTON STREET
LOT IC-29	4-7-1	NEW BOSTON STREET R
LOT IC-30	10-1-6	30 ATLANTIC AVENUE
LOT IC-31	10-1-7	100 ATLANTIC AVENUE
LOT IC-32	9-2-2	NEW BOSTON STREET
LOT IC-33	5-1-9	236 PRESIDENTIAL WAY
LOT IC-34	5-1-8	225 PRESIDENTIAL WAY
LOT IC-35	5-4-3	PRESIDENTIAL WAY
LOT IC-36	5-4-2	200 PRESIDENTIAL WAY
LOT IC-37	5-4-6	PRESIDENTIAL WAY
LOT IC-38	5-4-4	300 PRESIDENTIAL WAY
LOT IC-39	5-4-5	400 PRESIDENTIAL WAY
LOT IC-40	10-1-16	101 COMMERCE WAY
LOT IC-41	10-1-2	112 COMMERCE WAY
LOT IC-42	10-1-19	103 COMMERCE WAY
LOT IC-43	10-1-20	99 COMMERCE WAY
LOT IC-44	10-1-18	COMMERCE WAY LOT 2
LOT IC-45	5-1-1	COMMERCE WAY LOT 4



LEGEND:

BOUNDARY LINE
SURVEY CONTROL LINE
RIGHT–OF–WAY
IPLEX SITE LIMIT
LAND CLASS LINE
5–1–1 TAX MAP PARCEL NO.
999 SURVEY CONTROL POINT NO.
DISK SET
I.PIN/C SET/FOUND TRAV
D.H. SET/FOUND TRAV
P.K. SET/FOUND TRAV
I.PIN SET/FOUND TRAV
G.B. SET/FOUND TRAV
LIMIT OF WEST HIDE PILE WORK AREA
LIMIT OF RRSM PARCELS WITHIN IPLEX SITE

CLASS A LAND
MAY CONTAIN CONTAMINATED GROUNDWATER

CLASS B LAND
MAY CONTAIN CONTAMINATED GROUNDWATER AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B

CLASS C LAND
MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.

CLASS D LAND
MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINANTED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

NOTES:

1. THE OWNER OF RECORD FOR LOT 5–1–1 IS (NOW OR FORMERLY) RESOURCES FOR RESPONSIBLE SITE MANAGEMENT, TRUSTEE OF THE INDUSTRI–PLEX SITE INTERIM CUSTODIAL TRUST – P.O. BOX 487 CHESTNUT HILL , MASSACHUSETTS 02467. DEED REFERENCE TO PARCEL 5–1–1 IS BOOK 19866 PAGE 258 DATED MAY 16, 1989 (RECORDED LAND) AND CERTIFICATE #188268 BOOK 1071 PAGE 118 DATED JULY 18, 1990 (REGISTERED LAND).

2. ELEVATION RECORDS TABULATED ON THESE DRAWINGS WERE COMPILED FROM FIELD OBSERVATIONS COLLECTED BY ELECTRONIC TOTAL STATION AND DATA COLLECTION TECHNIQUES. ELEVATIONS ARE SHOWN TO ONE HUNDREDTH OF A FOOT FOR SIMPLICITY OF TABULATION AND TO REDUCE COMPOUNDING ROUNDING ERRORS. IT IS THE INTENTION OF THE SURVEY TO REFLECT ELEVATIONS ONLY TO THE PRECISION REQUIRED BY THE PROJECT SPECIFICATIONS. ADDITIONAL PRECISION IS NOT IMPLIED BY THE TABULATION. COVER DEPTHS ARE GIVEN IN DECIMAL INCHES AND CALCULATED BY MULTIPLYING THE ELEVATION DIFFERENCES GIVEN IN DECIMAL FEET BY 12.

3. THE INFORMATION CONTAINED HEREIN IS THE RESULT OF AN ON–SITE FIELD SURVEY PERFORMED BY MERIDIAN LAND SERVICES, INC. DURING THE PERIOD OF SEPTEMBER, 1993 THROUGH JANUARY, 2000.

4. IN GENERAL, PLAN GRAPHICS SUCH AS BUILDINGS, WALKWAYS, CONCRETE PADS, EDGES OF PAVEMENT, CURBING, DRAINAGE FEATURES, ETC. WERE LOCATED FROM A FIELD SURVEY BY THIS OFFICE. ADDITIONAL GRAPHIC REPRESENTATIONS, NOT FIELD LOCATED, SUCH AS NON–GERMANE EDGES OF PAVEMENT, FENCE LINES, WATER COURSES AND ABUTTING DETAIL WERE TAKEN FROM REFERENCE PLANS 1 AND 2. THE LATTER MENTIONED DETAIL WILL BE REFERENCED ON THE PLAN WITHIN THE APPROPRIATE AREAS.

5. THE CONSTRUCTION SURVEY CONTROL NETWORK USED BY MERIDIAN LAND SERVICES, INC. WAS DERIVED ENTIRELY FROM THE EXISTING SITE CONTROL POINTS PROVIDED BY GOLDER ASSOCIATES AND VHB, INC., AS SHOWN ON REFERENCE PLAN 1, SHEET C–2 AND REFERENCE PLAN 2, SHEETS 11–1A THRU 11–1D.

6. THE COORDINATES AND ELEVATIONS OF THE EXISTING SITE CONTROL POINTS ARE BASED ON MASSACHUSETTS GRID COORDINATE SYSTEM/NAD–27 (NORTH AMERICAN DATUM OF 1927) AND NGVD–29 (THE NATIONAL GEODETIC VERTICAL DATUM OF 1929), AS STATED IN THE REFERENCE PLAN 2 NOTE 3 & SUBSEQUENTLY VERIFIED BY THIS OFFICE VIA GPS (GLOBAL POSITIONING) IN 2001.

7. A BOUNDARY "TIE IN" SURVEY WAS PERFORMED BY MERIDIAN LAND SERVICES, INC. PROPERTY LINES SHOWN HEREON WERE COMPILED AND MATHEMATICALLY COMPUTED FROM LAND COURT CASE NUMBER 7312. THESE COMPUTED PLANS WERE "BEST FIT" TO THE PROJECT COORDINATE SYSTEM USING NUMEROUS FIELD LOCATED MONUMENTS. SEE REFERENCE PLAN #3 FOR BOUNDARY LINES PERTAINING TO THIS PARCEL.

8. LAND CLASSIFICATION LINES SHOWN HEREON WERE TAKEN FROM REFERENCE PLAN 2.

9. ADDITIONAL SITE–WIDE INFORMATION CAN BE FOUND IN THE MASTER COVER CERTIFICATION REPORT, INCLUDING, MASTER RECORD DRAWINGS.

DIG SAFE
CALL TOLL FREE 1-888-344-7233
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

CERTIFICATION:

THE UNDERSIGNED, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE COMMONWEALTH OF MASSACHUSETTS, HEREBY CERTIFIES THAT THE INFORMATION ON THESE RECORD PLANS CONTAINED HEREIN IS THE RESULT OF SURVEY WORK PERFORMED IN CONFORMANCE WITH THE CODE OF MASSACHUSETTS REGULATIONS 250, SECTION 6.03.

PROFESSIONAL LAND SURVEYOR DATE

GRAPHIC SCALE
200' 100' 0 200' 400' 600'

REV.	DATE	DESCRIPTION		DR	CK
I	9/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS	JF	MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

PREPARED FOR:
ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

PREPARED BY:
MERIDIAN Land Services, Inc.
LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

DESIGNED BY:
Golder Associates
Manchester, New Hampshire
400 Commercial Street
Manchester, N.H. USA 03101
603–668–0880 • FAX 603–668–1199

PROJECT RECORD (TAX MAP PARCEL 5-1-1)

WEST HIDE PILE

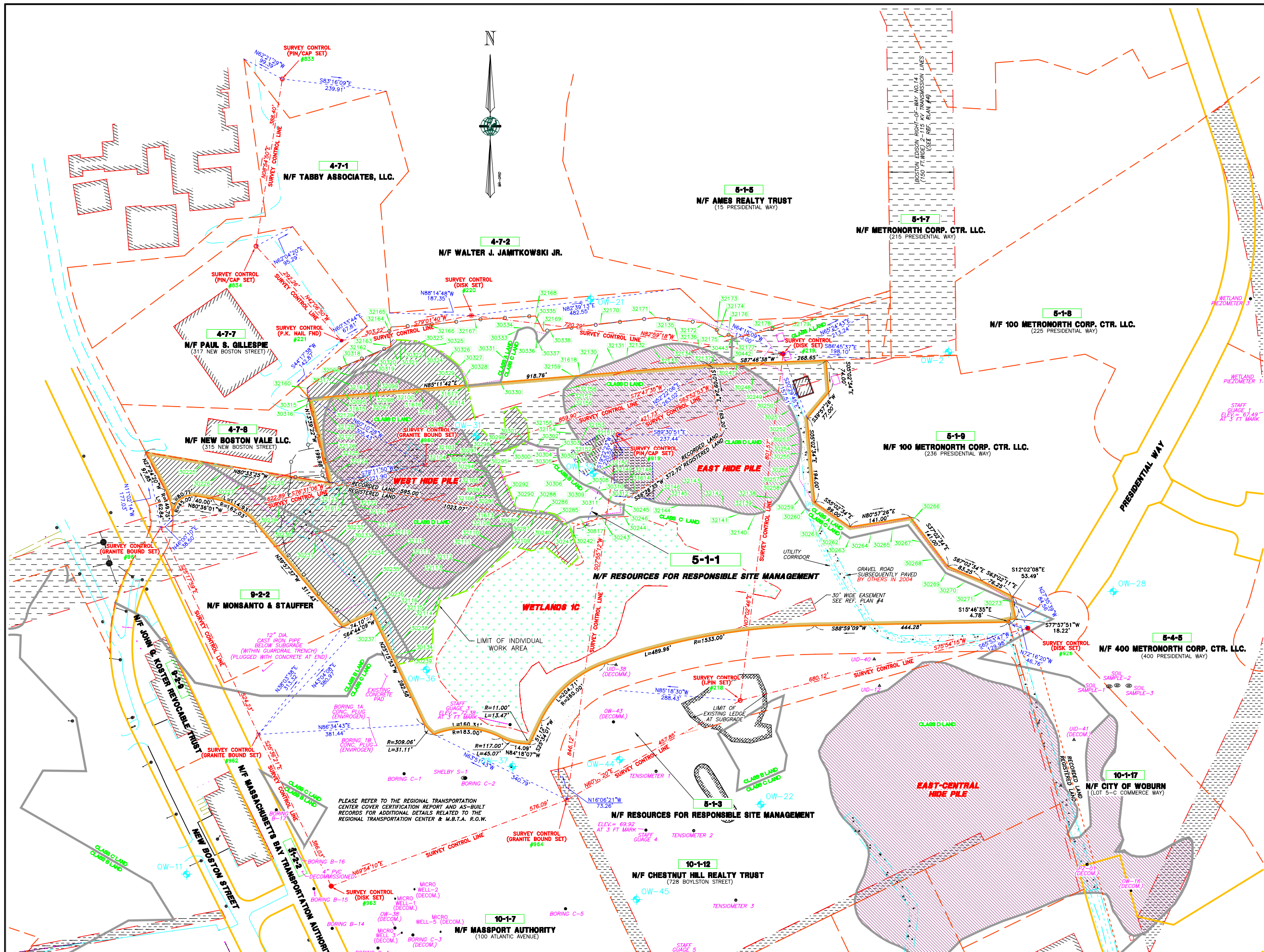
INDUSTRI-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS

SCALE: 1" = 200'
AUGUST 8, 2000

DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 290022111.dwg
DO NOT SCALE DRAWING

C-29
SHEET NO.
PROJECT: 2900.00
SHEET 1 OF 5

Sep 26, 2008 – 4:09pm MDP Land Desktop 2004 – LDT4
H:\mis\02900–0–AB\2900.22\AS–BUILTS\0–PARCEL–1\



LAND CLASS RESTRICTED AREAS POINTS CHART

NUMBER	NORTHING*	EASTING*	BEARING	LENGTH
30225	554586.5	695166.5	S59°29'24"E	50.00'
30226	554559.2	695212.9	S60°02'48"E	50.00'
30227	554534.3	695256.2	S59°29'24"E	50.00'
30228	554508.9	695299.3	S59°57'24"E	50.00'
30229	554483.5	695342.4	S59°57'24"E	50.00'
30230	554458.5	695385.7	S60°02'31"E	50.00'
30231	554433.5	695429.0	S60°02'31"E	50.00'
30232	554408.5	695472.3	S60°02'31"E	31.34'
30233	554392.9	695499.5	S30°44'52"E	48.59'
30234	554351.1	695524.3	S30°40'40"E	51.41'
30235	554306.9	695550.5	S30°18'33"E	49.03'
30236	554264.6	695575.2	S30°18'33"E	50.00'
30237	554221.4	695600.5	S29°16'24"E	50.00'
30238	554177.8	695625.0	S29°16'24"E	50.93'
30239	554133.4	695649.9	N82°06'50"W	47.76'
30134	554139.9	695602.5		
30315	554731.3	695412.6	N12°04'24"W	24.15'
30160	554754.9	695407.5	N52°48'53"E	53.39'
30161	554787.2	695450.1	N67°36'14"E	120.25'
30162	554833.0	695561.2	N64°14'14"E	42.53'
30163	554851.5	695599.6	N05°31'59"W	34.62'
30164	554885.9	695596.2	N23°06'53"E	10.21'
30165	554895.3	695600.2	N86°45'35"E	85.74'
32166	554900.2	695685.8	N83°33'21"E	106.91'
32167	554912.2	695792.1	N86°31'06"E	139.36'
32168	554920.6	695931.2	S77°28'37"E	39.14'
32169	554912.9	695949.2	N82°48'43"E	14.86'
30338	554887.8	695964.0	N82°48'43"E	116.60'
32170	554902.3	696079.7	N83°31'19"E	129.25'
32171	554916.9	696208.1	S83°34'40"E	110.30'
32172	554904.6	696317.7	S61°35'06"E	33.18'
32173	554888.8	696346.9	S17°34'21"E	9.68'
32174	554879.6	696349.8	S65°16'34"E	16.50'
32175	554872.7	696364.8	N63°29'07"E	10.19'
32176	554877.2	696373.9	S71°06'20"E	8.50'
30443	554847.5	696381.9	S71°06'20"E	10.78'
32177	554871.0	696392.1	N77°00'16"E	95.11'
32178	554892.4	696484.8	N74°41'18"E	97.22'
32179	554918.0	696578.6		
32179	554918.0	696578.6	S74°41'18"W	97.22'
32178	554892.4	696484.8	S77°00'16"W	95.11'
32177	554871.0	696392.1	N71°06'20"W	10.78'
30443	554847.5	696381.9	S01°29'28"W	56.80'
30442	554817.7	696380.5	S63°20'15"E	14.54'
30247	554811.2	696393.5	S60°19'25"E	44.01'
30248	554789.4	696431.7	S53°28'54"E	56.87'
30249	554755.5	696477.4	S42°43'57"E	31.27'
30250	554732.6	696498.6	S33°39'51"E	31.87'
30251	554706.0	696516.3	S24°31'48"E	30.02'
30252	554678.7	696528.8	S16°56'12"E	24.79'
30253	554655.0	696536.0	S07°31'41"E	27.56'
30254	554627.7	696539.6	S03°22'50"W	23.53'
30255	554604.2	696538.2	S15°58'34"W	26.97'
30256	554578.3	696530.8	S26°48'16"W	26.97'
30257	554554.2	696518.6	S30°44'42"W	10.43'
30258	554545.2	696513.3	S29°37'15"E	50.00'
30259	553831.0	696393.1	S29°37'15"E	26.34'
30260	554478.9	696551.0	S56°05'09"E	50.00'
30261	554451.0	696592.5	S56°05'09"E	50.00'
30262	554423.1	696634.0	S56°05'09"E	21.87'
30263	554410.9	696652.2	N77°27'34"E	50.00'
30264	554421.7	696701.0	N77°27'34"E	50.00'
30265	554432.6	696749.8	N77°27'34"E	36.40'
30266	554440.5	696785.3	S38°16'19"E	50.00'
30267	554401.2	696816.3	S38°16'19"E	50.00'
30268	554362.0	696847.2	S38°16'19"E	39.64'
30269	554330.9	696871.8	S66°38'16"E	50.00'
30270	554311.0	696917.7	S66°38'16"E	50.00'
30271	554291.2	696963.6	S66°38'16"E	50.00'
30272	554271.4	697009.5	S66°38'16"E	15.84'
30273	554265.1	697024.0		
30246	554489.0	696121.0	S84°15'11"E	13.34'
30245	554487.7	696134.2	S05°18'49"W	23.07'
30244	554464.7	696132.1	S86°42'18"W	52.41'
30243	554461.7	696079.7	S86°42'18"W	47.08'
30817	554459.0	696032.7	S64°58'52"W	28.77'
30242	554446.8	696006.7	S64°58'52"W	14.35'
30241	554440.7	695993.6	N33°55'36"W	11.17'
30240	554450.0	695987.4	N50°52'00"W	18.27'
30285	554461.5	695973.2	N78°19'57"W	29.14'
30286	554467.4	695944.7	S88°46'23"W	11.99'
30287	554467.2	695932.7	N83°08'05"W	11.99'
30288	554468.6	695920.8	N81°11'34"W	20.93'
30289	554471.8	695900.1	N85°24'03"W	20.93'
30290	554473.5	695879.3	N68°17'14"W	23.84'
30291	554482.3	695857.1	N29°51'05"W	23.84'
30292	554503.0	695845.3	N18°33'25"W	50.55'
30293	554550.9	695829.2	N26°33'09"W	13.24'
30294	554562.7	695823.3	N42°32'37"W	13.24'
30295	554572.5	695814.3	N36°40'54"W	12.89'
30296	554582.8	695806.6	N24°48'09"W	12.89'
30297	554594.5	695812.0	N66°26'24"E	29.92'
30298	554606.5	695839.5	N69°02'05"E	38.71'
30299	554620.1	695875.1	N71°36'27"E	16.12'
30300	554625.2	695890.4	N52°11'53"E	16.12'
30301	554635.1	695903.1	S67°58'05"E	35.63'
30302	554621.7	695936.2	S83°42'13"E	46.42'
30303	554616.6	695982.3	S04°04'36"E	20.54'
30304	554596.2	695983.7	S25°41'21"W	20.54'
30305	554577.7	695992.7	S41°23'08"E	28.04'
30306	554556.6	696011.2	S51°09'56"E	28.04'
30307	554539.0	696033.0	S60°45'23"E	13.93'
30308	554532.2	696045.2	S70°09'28"E	13.93'
30309	554527.5	696058.3	S64°24'23"E	17.66'
30310	554519.9	696074.2	S43°30'10"E	17.66'
30311	554507.1	696086.4	S54°12'36"E	19.70'
30312	554495.5	696102.3	S70°33'21"E	19.70'
30246	554489.0	696121.0		

LAND CLASS RESTRICTED AREAS POINTS CHART

NUMBER	NORTHING*	EASTING*	BEARING	LENGTH
30338	554887.8	695964.0	S42°54'17"W	38.37'
30337	554859.7	695937.9	N24°24'39"W	9.62'
30336	554868.4	695933.9	N19°36'43"W	21.69'
30335	554888.8	695926.6	N79°11'37"W	21.69'
30334	554893.0	695905.3	N69°06'39"E	15.21'
30333	554887.5	695891.1	S18°50'58"W	75.65'
30331	554815.9	695866.6	S18°50'58"W	50.00'
30330	554768.6	695850.5	S83°43'20"W	80.13'
30314	554759.8	695770.8	N11°02'33"W	1.75'
31617	554761.5	695770.5	N12°25'33"W	7.11'
30329	554768.5	695769.0	N14°55'09"W	8.87'
30328	554777.0	695766.7	N27°03'47"W	28.47'
30327	554802.4	695753.7	N49°44'53"W	28.47'
30326	554820.8	695732.0	N54°55'45"W	53.58'
30325	554851.6	695688.2	N68°01'38"W	14.22'
30324	554856.9	695675.0	N86°16'42"W	14.22'
30323	554857.8	695660.8	S86°48'51"W	27.35'
30322	554856.3	695633.5	N77°36'35"W	11.83'
30321	554858.8	695621.9	S56°14'44"W	21.62'
30320	554846.8	695603.9	S57°09'37"W	63.74'
30319	554812.3	695550.4	S60°07'16"W	50.00'
30318	554787.3	695507.0	S51°27'05"W	35.70'
30317	554765.1	695479.1	S51°27'05"W	50.00'
30316	554733.9	695440.0	S84°27'45"W	27.56'
30315	554731.3	695412.6		
31612	554531.4	695498.2	N40°26'07"W	16.15'
32123	554543.6	695487.7	N48°13'10"W	25.04'
32124	554560.3	695469.0	N31°24'27"W	25.72'
32125	554582.3	695455.6	N11°29'45"W	44.97'
32126	554626.4	695446.7	N03°32'43"W	33.36'
32127	554659.6	695444.6	N06°39'16"E	40.30'
32128	554699.7	695449.3	N22°27'53"E	32.62'
32129	554729.8	695461.7	N45°00'00"E	8.68'
31615	554736.0	695467.9	N45°00'00"E	28.02'
32095	554755.8	695487.5	N45°00'00"E	36.69'
32096	554781.7	695513.6	N69°06'01"E	30.61'
32097	554792.6	695542.2	S85°25'00"E	32.84'
32098	554790.0	695575.0	S72°11'36"E	42.16'
32099	554777.1	695615.1	S65°48'51"E	53.49'
32100	554755.2	695663.9	S60°41'14"E	4.76'
31616	554752.9	695668.1	S56°09'51"E	46.29'
32101	554727.1	695706.5	S43°05'30"E	50.03'
32102	554690.5	695740.7	S32°53'50"E	51.14'
32103	554647.6	695768.4	S29°00'12"E	52.01'
32104	554602.1	695793.7	S29°01'50"E	52.01'
32105	554556.6	695818.9	S25°16'08"E	53.12'
32106	554508.6	695841.6	S26°49'54"E	39.47'
32107	554473.4	695859.4	S28°14'01"E	2.64'
31613	554471.1	695860.7	S26°02'59"E	36.97'
32108	554437.8	695876.9	S07°44'00"E	15.71'
32109	554422.3	695879.0	S45°00'00"W	41.24'
32110	554393.1	695849.8	S68°18'21"W	31.59'
32111	554381.4	695820.5	S50°27'35"W	50.00'
32112	554349.6	695781.9	S50°27'35"W	31.38'
32113	554329.6	695757.7	S50°27'35"W	50.00'
32114	554297.8	695719.2	S82°05'33"W	20.73'
32115	554294.9	695698.6	N69°47'47"W	27.54'
32116	554304.5	695672.8	N46°27'16"W	50.00'
32117	554338.9	695636.5	N43°48'04"W	50.00'
32118	554375.0	695601.9	N39°12'23"W	50.26'
32119	554414.0	695570.2	N41°00'48"W	50.12'
32120	554451.8	695537.3	N34°13'00"W	38.17'
32121	554483.3	695515.8	N17°46'44"W	42.17'
32122	554523.5	695502.9	N31°05'13"W	9.17'
31612	554531.4	695498.2		
30247	554811.2	696393.5	S60°19'25"E	44.01'
30248	554789.4	696431.7	S53°28'54"E	56.87'
30249	554755.5	696477.4	S42°43'57"E	31.27'
30250	554732.6	696498.6	S33°39'51"E	31.87'
30251	554706.0	696516.3	S24°31'48"E	30.02'
30252	554678.7	696528.8	S16°56'12"E	24.79'
30253	554655.0	696536.0	S07°31'41"E	27.56'
30254	554627.7	696539.6	S03°22'50"W	23.53'
30255	554604.2	696538.2	S15°58'34"W	26.97'
30256	554578.3	696530.8	S26°48'16"W	26.97'
30257	554554.2	696518.6	S30°44'12"W	10.43'
30258	554545.2	696513.3	S29°18'15"W	49.62'
32138	554502.0	696489.0	S45°00'00"W	42.50'
32139	554471.9	696458.9	S75°35'43"W	24.56'
32140	554465.8	696435.2	N86°42'00"W	33.48'
32141	554467.7	696401.7	N71°58'10"W	42.08'
32142	554480.7	696361.7	N84°08'57"W	48.36'
32143	554485.7	696313.6	N88°43'49"W	51.90'
32144	554486.8	696261.7	N85°59'13"W	33.12'
32145	554489.1	696228.7	N78°06'14"W	29.84'
32146	554495.3	696199.5	N63°23'42"W	44.01'
31614	554515.0	696160.1	N58°07'59"W	34.13'
32148	554533.0	696131.1	N58°37'38"W	38.59'
32149	554553.1	696098.2	N60°46'28"W	25.98'
32150	554565.8	696075.5	N72°05'01"W	9.40'
32151	554568.7	696066.6	N34°29'42"W	29.62'
32152	554593.1	696049.8	N24°21'20"W	40.07'
32153	554629.6	696033.3	N30°30'16"W	25.82'
32154	554651.8	696020.2	N30°11'53"W	25.86'
32155	554674.2	696007.2	N15°20'24"W	28.77'
32156	554701.9	695999.6	N08°34'33"W	31.07'
32157	554732.7	695994.9	N03°40'16"W	18.93'
32158	554751.6	695996.1	N45°00'00"E	39.35'
32159	554779.4	696024.0	N66°03'46"E	10.83'
31618	554783.8	696033.9	N66°03'46"E	23.95'
32130	554793.5	696055.7	N69°29'00"E	60.32'
32131	554814.6	696112.2	N69°21'40"E	30.30'
32132	554825.3	696140.6	N68°13'47"E	63.38'
32133	554848.8	696199.5	N76°16'57"E	24.07'
32134	554854.5	696222.9	N86°41'33"E	37.59'
32135	554856.7	696260.4	S79°22'46"E	45.44'
32136	554848.3	696305.0	S69°51'27"E	41.33'
32137	554834.1	696343.8	S65°51'47"E	40.13'
30442	554817.7	696380.5	S63°20'15"E	14.54'
30247	554811.2	696393.5		

DECOMMISSIONED STRUCTURES POINTS TABLE

Point	Northing	Easting	Elevation	Description
22606	553887.0	695876.0		OW-37
22607	553887.0	695876.0		OW-37A
22610	553989.0	696110.0		OW-43
22628	554072.0	696720.0		UID-12
22636	554120.0	696116.0		UID-38
22637	554133.0	696708.0		UID-40
23612	553982.7	695872.9	69.52	STAFFGUAGE-3

NOTE:
1. BORINGS BY NH BORING, GOLDER, MICRO-WELL, AND ENVIROGEN WERE FILLED WITH GROUT.
2. SEE APPENDIX "E" FOR ADDITIONAL DECOMMISSIONED STRUCTURE DATA.

SURVEY CONTROL NETWORK POINTS

POINT #	NORTHING (FEET)	EASTING (FEET)	ELEVATION (FEET)	DESC.
8	555829.94	696197.41	88.93	PIN/C(s)
9	554787.93	695334.79	93.29	MAGNL(s)
117	554935.71	696605.05	119.44	I.PIN(f)
118	554997.69	696744.31	124.49	I.PIN(f)
119	554977.42	696743.93	125.72	I.PIN(f)
120	556005.46	696613.05	95.27	C.B.(f)
128	555312.88	696740.29	115.51	I.PIN(f)
129	555279.16	696890.59	117.47	I.PIN(f)
130	555370.20	696889.50	118.61	C.B.(f)
132	554847.71	694915.95	78.43	I.PIN(f)
133	555058.90	695126.18	96.01	P.K.(f)
134	555102.46	695256.34	96.55	I.PIN(f)
135	555142.01	695222.63	90.28	P.K.(f)
157	555902.41	696284.78	90.59	C.B.(f)
216	553575.07	697396.19	72.34	DISK
218	554038.23	696400.64	91.30	I.PIN(s)
219	554833.75	696498.97	113.61	DISK
220	554921.67	695784.06	73.06	D.H.(f)
221	554863.96	695486.38	98.35	P.K.(f)
245	553801.79	695102.81	70.74	PIN/C(s)
301	552991.99	695650.71	67.70	G.B.(f)
302	552983.08	695726.35	68.00	G.B.(f)
303	552824.40	695720.82	66.92	G.B.(f)
751	550314.48	698866.23	58.42	G.B.(f)
752	550363.63	698811.51	57.52	G.B.(f)
754	550089.43	697819.49	53.51	G.B.(f)
755	550155.77	697925.27	54.70	G.B.(f)
756	550192.19	698080.56	56.08	PIN/C(f)
828	552989.66	695204.98	72.68	RRSPK(S)
831	555171.27	696067.95	92.16	PIN/C(s)
832	555602.29	695870.66	86.06	P.K.(s)
833	555464.48	695350.57	78.24	PIN/C(s)
834	555080.77	695290.39	96.82	PIN/C(s)
850	553166.01	695458.74	66.79	P.K.(f)
857	554268.42	694914.00	73.19	PIN/C(S)
858	553407.27	694721.18	73.66	P.K.(S)
871	553005.63	694989.59	75.27	P.K.(s)

SURVEY CONTROL NETWORK POINTS

POINT #	NORTHING (FEET)	EASTING (FEET)	ELEVATION (FEET)	DESC.
872	553190.49	694871.47	74.38	P.K.(s)
873	553293.14	694886.21	73.74	PIN/C(s)
874	553152.45	695225.83	72.96	P.K.(s)
887	553569.05	697762.19	74.67	G.B.(s)
888	553762.69	698088.18	75.46	G.B.(F)
889	553895.58	698391.10	74.41	PIN/C(s)
890	553542.21	698649.64	72.97	G.B.(S)
891	552879.28	699142.48	69.34	PIN/C(s)
892	552674.56	699013.57	68.58	G.B.(S)
893	552536.04	698702.70	69.67	G.B.(S)
894	553002.10	698412.19	69.40	MAGNL(s)
895	552730.89	697787.70	67.50	MAGNL(s)
919	554648.09	696120.30	106.02	PIN/C(s)
920	553826.01	695995.76	79.40	PIN/C(s)
921	553411.21	696193.36	78.92	PIN/C(s)
922	552932.88	696420.08	71.72	DISK
923	553120.20	696816.46	72.78	DISK
924	553462.61	697331.77	68.39	DISK
925	553842.55	697009.22	94.88	PIN/C(s)
926	554203.87	697060.28	79.00	DISK
927	553812.75	696737.39	107.69	PIN/C(s)
928	552561.74	696815.28	88.15	PIN/C(s)
929	552790.55	697119.09	71.75	PIN/C(s)
930	553018.55	697429.53	68.02	DISK
931	554521.49	694626.27	87.39	D.H.(f)
932	554421.26	694348.31	101.39	PIN/C(s)
933	554251.87	694364.55	90.95	PIN/C(s)
934	553498.66	694623.81	69.94	PIN/C(s)
935	553378.01	694317.96	72.10	PIN/C(s)
936	553290.51	694245.09	81.03	PIN/C(s)
937	553114.85	694221.58	97.94	PIN/C(s)
938	552836.93	694953.72	80.60	DISK
944	550614.66	697637.80	N/A	G.B.(F)
945	554503.77	694825.96	74.68	P.K.(f)
947	552692.72	695376.15	65.92	DISK
948	552343.09	695555.77	63.57	G.B.(s)
949	552438.47	696030.92	71.73	DISK
950	552035.73	696313.53	68.40	G.B.(s)

SURVEY CONTROL NETWORK POINTS

POINT #	NORTHING (FEET)	EASTING (FEET)	ELEVATION (FEET)	DESC.
951	551631.65	697151.14	65.87	DISK
952	551433.89	697800.32	73.68	DISK
953	551087.91	698466.50	63.64	DISK
954	550919.29	698709.73	60.45	DISK
955	551532.44	698410.23	63.71	DISK
956	551861.31	698260.16	65.21	DISK
957	552364.26	698003.18	67.73	G.B.(F)
960	554579.37	695677.56	96.32	G.B.(s)
961	554434.15	695071.84	85.91	G.B.(s)
962	553960.20	695295.87	79.76	G.B.(s)
963	553612.09	695462.70	78.81	DISK
964	553810.04	696003.71	79.67	G.B.(s)
965	553424.46	696186.34	79.67	G.B.(s)
966	553373.67	695576.30	77.68	DISK
967	553108.66	695695.24	76.92	DISK
968	552790.10	695786.11	73.69	DISK
971	554878.15	696698.61	129.11	PIN/C(s)
972	555073.02	696822.69	125.79	PIN/C(s)
973	555324.98	697186.40	117.15	PIN/C(s)
974	555328.29	697548.91	96.63	G.B.(f)
975	555468.38	697809.50	92.45	DISK
976	555640.49	697867.72	72.09	G.B.(s)
977	555411.42	697997.77	85.47	PIN/C(s)
978	555238.37	697940.64	70.49	G.B.(S)
979	555115.28	698015.18	87.78	PIN/C(s)
980	554928.03	698008.18	80.93	PIN/C(s)
981	554828.02	697781.52	67.51	G.B.(s)
982	554608.27	697651.96	76.95	DISK
983	554337.91	697697.91	77.28	MAGNL(s)
984	554073.15	697638.96	76.58	PIN/C(s)
985	554090.37	697850.88	75.15	PIN/C(s)
986	553791.19	697828.87	72.71	G.B.(F)
1141	555436.21	696190.95	93.57	I.PIN(f)
10874	553119.80	695375.82	69.28	G.B.(f)
10875	553250.96	695361.95	69.88	G.B.(f)
10941	553209.59	695443.61	67.53	G.B.(f)
52003	553504.76	694675.40	69.61	I.PIN(f)
60500	552811.04	694811.44	81.43	G.B.(F)

SURVEY CONTROL NETWORK POINTS

POINT #	NORTHING (FEET)	EASTING (FEET)	ELEVATION (FEET)	DESC.
60504	553493.08	694795.99	68.28	G.B.(F)
60505	553431.74	694740.48	72.60	G.B.(F)
60511	552626.22	694850.12	75.34	I.PIN(F)
60516	552373.95	695412.38	64.04	I.PIN(F)
60518	551650.24	696899.13	59.14	C.B.(F)
60519	553266.67	696998.63	71.39	I.PIN(F)
60545	550535.42	698962.56	N/A	I.PIN(F)
60549	550646.41	699172.79	N/A	G.B.(F)
60551	550588.82	697583.34	N/A	G.B.(F)
60552	550611.64	697561.55	N/A	G.B.(F)
60557	551335.71	698564.07	N/A	C.B.(F)
60558	551388.23	698534.25	N/A	G.B.(F)
60615	553385.09	694695.50	75.40	I.PIN(F)
60950	550705.00	699289.45	N/A	G.B.(F)
62001	553285.48	694294.18	77.01	I.PIN(F)
65000	552990.73	694384.08	81.27	DISK
65001	554187.89	694605.57	73.26	G.B.(S)
65002	553508.43	695088.74	70.95	G.B.(S)
65003	552503.26	696521.21	65.89	G.B.(s)
65004	552366.69	696350.85	66.78	G.B.(s)
65005	553796.88	697140.89	74.08	DISK
65006	552744.10	697194.90	65.26	DISK
65007	555414.66	697522.06	102.24	G.B.(F)
65008	555217.20	697514.54	90.27	G.B.(F)
65009	555605.36	697779.98	90.97	C.B.(F)
65010	555803.93	697977.42	72.86	D.H.(F)
65011	555708.75	697858.52	73.01	D.H.(F)
65012	555702.94	697888.20	70.08	D.H.(F)
65013	555745.19	697945.39	70.36	D.H.(F)
65014	555440.08	698036.86	89.23	D.H.(F)
65015	555409.32	698071.85	82.18	G.B.(F)
65016	553829.73	698214.01	76.93	G.B.(F)
65017	553712.31	698725.05	66.57	G.B.(F)
65018	552588.82	698672.03	69.10	G.B.(F)
65019	552588.11	698792.15	69.58	G.B.(F)

RESTRICTED AREAS BY CLASSES OF LAND

CLASS OF LAND	DESCRIPTION
A	MAY CONTAIN CONTAMINATED GROUNDWATER
B	MAY CONTAIN CONTAMINATED GROUNDWATER, AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B.
C	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.
D	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

▨ LIMIT OF WEST HIDE PILE WORK AREA

LEGEND

- ASBUILT COVER TYPE
- TEST PIT
- MONITOR WELL
- BORING LOCATION
- MICRO WELL LOCATION
- PIEZOMETER LOCATION
- SOIL SAMPLE LOCATION
- STAFF GUAGE LOCATION
- TENSIOMETER LOCATION
- UID LOCATION
- MONITORING WELL LOCATION
- HYDRANT
- GATE VALVE
- CATCH BASIN (SQUARE)
- CATCH BASIN (ROUND)
- DRAIN MANHOLE
- SEWER MANHOLE
- UTILITY POLE
- GUY WIRE
- ASBUILT POINT NO. & LOCATION
- GAS METER
- GAS SHUT OFF
- WATER SHUT OFF
- WATER CONTROL BOX
- SIGN
- BOLLARD
- TELEPHONE MANHOLE
- BOUNDARY LINE
- RIGHT-OF-WAY
- ABUTTING PROPERTY LINES
- ASPHALT, CONCRETE, GRANITE CURB
- TRANSITION ZONE
- LAND CLASS LINE
- N 551,000 GRID LINE
- EDGE OF EXISTING PAVEMENT
- LIMIT OF GEOTEXTILE
- A.T.&T. FIBER OPTIC CABLE
- TOE OF SLOPE
- TOP OF SLOPE
- LIMIT CHAIN LINK FENCE
- EDGE OF ASBUILT GRAVEL ROAD
- BACK EDGE OF PLANTER
- EDGE OF PROPOSED PAVEMENT
- EXISTING EASEMENT
- ASBUILT CULVERT
- LIMIT OF TREELINE
- EXISTING CONCRETE STRUCTURE
- SURVEY CONTROL MONUMENT (GRANITE BOUND SET)
- SURVEY CONTROL MONUMENT (DISK SET)
- SURVEY CONTROL MONUMENT (PIN/CAP SET)
- LIMITS OF EXISTING EASEMENTS
- EDGE OF EXISTING BUILDINGS
- AREA OF LEDGE
- HIDE PILES BASED ON CONSENT DECREE
- LIMITS OF RIPRAP = 6" STONE
- AREA OF ENGINEERED COVER (COMPLIES WITH 100% DESIGN PLANS UNLESS OTHERWISE STATED)
- ASBUILT FINISH GRADE CONTOUR 5' INTERVAL
- ASBUILT FINISH GRADE CONTOUR 1' INTERVAL
- OHW OVERHEAD WIRES
- UGG UNDERGROUND GAS LINE
- 99999 POINT MARKER (SEE POINTS CHART)
- TIE COURSE
- SURVEY CONTROL LINE
- OW-50 DECOMMISSIONED WELL PER REFERENCE PLAN #2

GRAPHIC SCALE
100' 50' 0 100' 200' 300'

REV.	DATE	DESCRIPTION		DR	CK
I	9/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS	JF	MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

PREPARED FOR:
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

PREPARED BY:
MERIDIAN Land Services, Inc.
ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

DESIGNED BY:
Golder Associates
Manchester, New Hampshire
400 Commercial Street
Manchester, N.H. USA 03101
603-668-0880 • FAX 603-668-1199

PROJECT RECORD LOT (WEST HIDE PILE)
BOUNDARY LINES, LAND CLASSIFICATIONS, AND EASEMENTS
INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS

AUGUST 8, 2000
SCALE: 1" = 100'

DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 29002212.dwg
DO NOT SCALE DRAWING
C-30
SHEET NO.
PROJECT: 2900.00
SHEET 2 OF 5

MERIDIAN LAND SERVICES POINTS TABLE

Point Number	Northing	Easting	Subgrade (Geotextile) Elev. Feet	Cover Grade Elev. Feet	Cover Grade Depth Inches	Finish Grade Elev. Feet	Finish Grade Depth Inches	Total Depth Inches	Desc.
25002	554604.1	695505.6	93.27	94.39	13.49	94.85	5.53	19.02	R
25003	554591.4	695468.7	92.06	93.08	12.28	93.50	5.09	17.36	R
25004	554586.2	695456.0	88.84	A		90.28		17.28	R
25005	554635.2	695445.0	89.27	A		90.62		16.20	R
25006	554637.5	695450.8	92.19	93.20	12.13	93.56	4.31	16.44	R
25007	554650.5	695488.5	92.78	94.05	15.19	94.56	6.10	21.29	R
25008	554677.3	695488.8	92.94	93.97	12.40	94.32	4.25	16.64	R
25009	554683.8	695454.9	91.08	92.27	14.30	92.86	7.00	21.30	R
25010	554693.4	695445.5	89.78	90.92	13.76	91.56	7.69	21.46	R
25011	554729.7	695452.0	88.72	90.14	17.02	90.75	7.34	24.36	R
25012	554717.3	695468.4	90.32	91.44	13.42	92.01	6.88	20.29	R
25013	554697.7	695496.6	92.78	93.81	12.29	94.14	4.03	16.32	R
25014	554711.6	695510.4	92.66	93.73	12.86	94.37	7.68	20.54	R
25018	554759.7	695477.3	84.66	87.09	29.24	87.47	4.54	33.78	R
25019	554771.8	695469.0	82.70	85.02	27.80	85.61	7.12	34.92	R
25020	554792.1	695512.6	77.55	81.11	42.71	81.59	5.77	48.48	R
25024	554768.8	695520.8	84.62	86.12	18.08	86.54	5.05	23.14	R
25027	554722.2	695537.3	92.72	93.73	12.18	94.27	6.42	18.60	R
25028	554737.1	695580.0	92.71	93.83	13.38	94.17	4.12	17.50	R
25030	554782.3	695566.7	83.34	84.41	12.79	84.78	4.45	17.24	R
25032	554807.1	695559.7	75.81	78.69	34.50	79.24	6.70	41.20	R
25034	554817.4	695556.7	73.03	76.38	40.15	76.92	6.55	46.70	R
25035	554842.5	695604.4	71.97	73.37	16.80	73.77	4.86	21.66	R
25036	554831.3	695604.4	72.83	74.78	23.40	75.27	5.88	29.28	R
25038	554810.3	695604.6	76.83	77.88	12.64	78.48	7.20	19.84	R
25040	554779.0	695604.3	84.15	85.20	12.59	85.57	4.49	17.08	R
25042	554740.3	695604.7	92.69	93.72	12.37	94.09	4.42	16.79	R
25043	554736.8	695628.2	92.67	93.25	6.89	94.21	11.60	18.49	R
25045	554764.7	695636.1	85.71	86.81	13.22	87.16	4.25	17.47	R
25047	554795.4	695645.8	78.28	79.33	12.54	79.76	5.15	17.69	R
25048	554822.7	695653.3	72.63	73.92	15.46	74.52	7.26	22.72	R
25049	554853.5	695661.5	70.86	A		72.47		19.34	R
25050	554825.4	695711.2	71.63	A		73.00		16.42	R
25051	554794.7	695694.8	73.41	74.45	12.53	74.85	4.75	17.28	R
25052	554771.4	695681.8	78.94	80.26	15.86	80.65	4.68	20.54	R
25054	554747.8	695668.7	86.04	87.36	15.86	87.82	5.52	21.38	R
25056	554724.4	695654.7	92.37	93.67	15.55	94.19	6.30	21.85	R
25057	554699.2	695697.1	92.48	93.53	12.59	93.88	4.24	16.82	R
25059	554723.5	695710.0	84.84	85.92	12.95	86.27	4.24	17.18	R
25061	554744.5	695722.4	77.32	78.48	13.93	78.85	4.44	18.37	R
25062	554760.9	695731.4	73.09	74.12	12.34	74.67	6.66	19.00	R
25063	554791.3	695747.8	71.17	A		72.52		16.16	R
25064	554719.4	695758.7	72.40	73.76	16.26	74.27	6.18	22.44	R
25067	554703.7	695725.9	83.89	85.15	15.14	85.76	7.38	22.52	R
25069	554692.3	695701.8	92.23	93.29	12.80	93.75	5.47	18.28	R
25070	554647.5	695723.9	92.24	93.32	13.00	93.66	4.07	17.06	R
25072	554657.7	695745.1	84.43	85.76	16.03	86.27	6.14	22.18	R
25074	554668.0	695766.1	76.41	77.48	12.84	77.85	4.49	17.33	R
25075	554672.3	695776.4	72.83	74.20	16.42	74.70	5.96	22.38	R
25076	554627.2	695797.7	73.65	74.70	12.61	75.13	5.22	17.83	R
25077	554622.9	695788.5	76.43	77.65	14.60	78.18	6.37	20.98	R
25079	554612.6	695769.1	84.79	85.94	13.78	86.28	4.12	17.89	R
25081	554601.0	695747.9	92.97	94.08	13.32	94.43	4.16	17.48	R
25082	554557.4	695770.4	93.09	94.22	13.51	94.60	4.57	18.08	R
25084	554568.8	695791.4	85.79	86.89	13.26	87.49	7.20	20.46	R
25086	554578.4	695809.4	77.54	78.65	13.34	79.07	4.99	18.34	R
25087	554583.0	695817.5	73.32	74.58	15.02	74.85	3.32	18.35	R
25089	554541.3	695846.3	71.16	A		72.58		17.08	R
25090	554537.7	695836.6	72.98	73.54	6.73	74.82	15.36	22.08	R
25091	554534.2	695829.2	76.91	78.02	13.30	78.38	4.26	17.56	R
25093	554527.2	695810.2	85.11	86.35	14.86	86.97	7.39	22.25	R
25095	554517.7	695789.1	92.64	93.73	13.16	94.26	6.28	19.44	R
25096	554471.4	695807.9	92.55	93.69	13.67	94.06	4.45	18.12	R
25098	554480.7	695830.4	84.46	85.55	13.18	85.92	4.45	17.63	R
25100	554488.6	695848.5	76.21	77.02	9.66	77.62	7.20	16.92	R
25101	554491.7	695858.4	72.19	72.85	7.90	74.09	14.88	22.80	R
25102	554495.3	695867.0	70.57	A		72.12		18.60	R
25103	554449.7	695890.7	70.14	71.32	14.16	71.76	5.29	19.45	R
25104	554448.5	695884.6	70.65	71.62	11.70	72.17	6.55	18.25	R
25106	554446.1	695864.9	76.64	77.83	14.27	78.19	4.27	18.54	R
25108	554443.8	695844.6	84.63	85.74	13.22	86.18	5.32	18.54	R
25110	554441.0	695819.5	92.59	93.76	13.99	94.13	4.43	18.42	R
25111	554432.7	695818.2	92.69	93.80	13.25	94.20	4.91	18.16	R
25113	554420.3	695839.8	84.63	85.76	13.57	86.15	4.68	18.25	R
25115	554410.8	695855.9	76.52	77.57	12.59	78.00	5.10	17.69	R
25117	554400.3	695874.7	70.57	71.74	13.96	72.14	4.88	18.84	R
25118	554396.2	695881.9	70.00	71.16	13.88	71.74	7.01	20.89	R
25119	554361.9	695840.3	70.15	71.29	13.58	71.83	6.59	20.17	R
25120	554369.1	695836.2	70.67	71.81	13.74	72.21	4.78	18.52	R
25121	554379.5	695830.1	72.59	73.69	13.14	73.97	3.32	16.46	R
25122	554387.4	695824.6	76.35	77.44	13.16	77.84	4.73	17.89	R
25124	554403.7	695814.5	84.50	85.63	13.57	86.05	4.98	18.55	R
25126	554421.9	695803.8	92.66	93.82	13.88	94.25	5.22	19.10	R
25127	554397.0	695764.2	92.67	93.78	13.28	94.15	4.44	17.72	R
25129	554379.9	695774.2	84.65	85.89	14.84	86.33	5.29	20.14	R

MERIDIAN LAND SERVICES POINTS TABLE

Point Number	Northing	Easting	Subgrade (Geotextile) Elev. Feet	Cover Grade Elev. Feet	Cover Grade Depth Inches	Finish Grade Elev. Feet	Finish Grade Depth Inches	Total Depth Inches	Desc.
25444	554467.4	695944.5	69.69	70.74	12.54	71.12	4.52	17.06	R
25445	554461.5	695973.0	69.53	70.74	14.59	71.12	4.56	19.15	R
25446	554440.7	695993.5	70.15	71.23	12.85	71.67	5.35	18.20	R
25447	554431.3	696005.5	70.11	71.18	12.83	71.57	4.66	17.48	R
25448	554413.9	695964.2	70.02	71.14	13.40	71.72	6.96	20.36	R
25449	554396.5	695922.7	70.03	71.25	14.71	71.66	4.88	19.60	R
25450	554432.0	695933.7	69.98	71.08	13.09	71.52	5.34	18.43	R
25451	554395.6	695957.1	69.95	70.50	6.53	71.29	9.48	16.08	GRID
25452	554396.7	695989.1	70.07	71.32	15.05	71.75	5.12	20.17	C71
25453	554386.8	695921.6	69.66	70.62	11.45	71.31	8.29	19.74	GRID
25478	554731.4	695767.0	71.73	A		73.23		17.95	R
25493	554608.0	695822.3	70.93	A		72.42		17.87	FAB
25494	554657.8	695803.3	71.23	A		72.74		18.13	FAB
25495	554704.0	695781.5	71.26	A		72.71		17.48	FAB
25496	554745.4	695762.7	71.01	A		72.50		17.89	FAB
25511	554605.8	695832.4	69.19	A		70.61		17.14	TOE
25512	554618.1	695866.7	68.76	A		70.11		16.20	TOE
25513	554636.2	695911.3	68.65	A		69.99		16.08	TOE
25514	554678.6	695906.3	68.50	E		71.78		39.38	TOE
25515	554707.1	695885.6	68.59	E		71.39		33.59	TOE
25516	554696.8	695863.7	68.47	E		70.25		21.36	TOE
25517	554655.0	695866.5	69.29	E		70.93		19.74	TOE
25518	554635.0	695826.3	69.72	E		71.54		21.89	TOE
25520	554646.6	695872.9	71.72	E		73.09		16.37	TOP
25523	554674.4	695897.4	71.09	E		72.44		16.20	TOP
25524	554642.1	695903.6	71.11	A		72.47		16.32	TOP
25525	554624.6	695864.9	71.48	A		72.85		16.44	TOP
25537	554843.2	695585.0	70.48	72.30	21.78	72.88	6.94	28.72	C72
25538	554821.5	695539.2	71.94	74.65	32.51	75.23	6.98	39.49	C74
25542	554804.9	695545.7	75.70	78.90	38.42	79.44	6.50	44.93	C78
25543	554798.9	695521.8	75.90	79.68	45.32	80.15	5.65	50.98	C78
25544	554802.9	695497.7	76.55	78.66	25.28	79.11	5.42	30.71	C78
25547	554780.2	695493.6	80.38	83.17	33.47	83.68	6.07	39.54	C82
25548	554786.0	695457.6	82.45	83.45	12.02	83.88	5.14	17.16	C82
25551	554767.8	695451.2	85.24	86.77	18.35	87.20	5.20	23.54	C86
25552	554771.4	695429.2	87.23	87.75	6.29	88.38	7.48	13.76	LIM-REM
25555	554741.6	695483.8	88.23	89.52	15.59	90.11	7.00	22.58	C90
25556	554755.6	695409.6	90.48	90.56	0.97	91.05	5.90	6.88	LIM-REM
25558	554759.4	695495.9	85.26	87.36	25.30	87.79	5.10	30.40	C86
25560	554777.8	695507.8	81.32	84.24	35.02	84.59	4.21	39.23	C82
25706	554498.8	695442.3	86.99	B		88.49		18.00	CL
25735	554478.8	695416.7	85.24	B		86.80		18.72	CL
25736	554459.3	695391.8	83.71	B		85.25		18.49	CL
25792	554529.4	695300.0	91.16	92.19	12.46	92.55	4.33	16.79	TOP
25793	554523.8	695280.0	89.57	90.70	13.55	91.07	4.44	17.99	BR
25794	554546.0	695285.2	89.69	90.70	12.14	91.08	4.49	16.63	BR
25933	554429.3	695477.5	82.92	84.09	14.05	84.69	7.16	21.22	CLswl
25934	554397.7	695493.0	82.20	83.34	13.73	84.46	13.40	27.13	CLswl
25935	554355.7	695518.1	82.39	83.49	13.14	84.08	7.03	20.17	CLswl
25936	554318.3	695555.5	81.78	82.93	13.76	83.29	4.26	18.02	CLswl
25937	554289.6	695597.3	79.89	80.94	12.61	81.28	4.07	16.68	CLswl
25951	554537.5	695456.3	85.13	A		86.46		16.00	EZ
25965	554584.6	695169.2	84.07	84.64	6.84	85.08	5.28	12.12	EZ-EP
25967	554560.4	695211.8	83.76	84.21	5.35	84.85	7.72	13.07	EZ-EP
25968	554535.1	695254.7	83.72	84.10	4.56	84.80	8.32	12.88	EZ-EP
25969	554509.8	695297.8	89.24	90.29	12.60	90.67	4.60	17.20	EZ
25970	554484.9	695340.6	83.86	84.90	12.48	85.31	4.85	17.33	EZ
25971	554459.4	695384.2	83.85	84.88	12.34	85.34	5.53	17.87	EZ
25972	554575.3	695219.4	84.48	85.31	9.96	85.66	4.24	14.20	EZ-EP
25973	554568.1	695267.7	84.66	85.11	5.44	85.91	4.73	15.00	EZ-EP
25974	554559.7	695317.0	85.78	A		87.19		16.92	EZ
25975	554550.7	695366.5	89.45	90.46	12.08	90.82	4.28	16.37	EZ
25976	554544.7	695414.9	88.43	89.60	14.08	89.99	4.60	18.67	EZ
25979	554434.4	695427.5	83.43	84.53	13.21	84.98	5.40	18.60	EZ
25980	554410.1	695469.2	85.12	86.14	12.26	86.61	5.64	17.88	EZ
26015	554400.3	695649.7	93.99	95.15	13.87	95.59	5.38	19.25	R
26017	554400.4	695699.7	93.95	94.96	12.17	95.45	5.87	18.04	R
26020	554450.1	695750.0	94.19	95.05	10.32	95.62	6.86	17.18	R
26023	554456.3	695631.9	94.66	95.75	13.03	96.10	4.26	17.29	R
26029	554500.1	695599.8	94.33	95.33	11.96	95.72	4.69	16.66	R
26031	554474.8	695678.5	96.20	97.06	10.27	97.57	6.17	16.44	R
26032	554494.8	695724.1	94.73	95.39	7.92	96.09	8.40	16.32	R
26034	554500.0	695750.2	94.23	94.70	5.64	95.60	10.80	16.44	R
26038	554550.0	695750.0	93.31	95.04	20.77	95.39	4.16	24.94	R
26039	554550.1	695700.0	94.65	95.54	10.67	96.12	6.95	17.62	R
26040	554530.7	695654.9	96.07	97.04	11.59	97.45	5.02	16.61	R
26043	554600.0	695700.1	93.75	95.10	16.19	95.29	2.34	18.53	R
26047	554650.1	695699.7	93.09	94.72	19.54	95.26	6.53	26.06	R
26048	554649.9	695648.5	94.64	95.50	10.32	96.05	6.60	16.92	R
26050	554635.5	695609.6	95.87	96.20	3.96	97.22	12.24	16.20	R
26052	554699.8	695650.5	93.38	94.83	17.40	94.95	1.44	18.84	R
26055	554699.8	695599.9	93.89	94.89	12.00	95.42	6.36	18.36	R
26057	554700.1	695550.2	93.20	94.30	13.20	94.82	6.24	19.44	R
26063	554600.0	695550.1	94.05	94.90	10.20	95.53	7.56	17.76	R
26064	554649.8	695549.9	94.23	94.96	8.76	95.62	7.92	16.68	R
26065	554619.7	695571.6	94.65	95.55	10.80	96.02	5.64	16.44	R

MERIDIAN LAND SERVICES POINTS TABLE

Point Number	Northing	Easting	Subgrade (Geotextile) Elev. Feet	Cover Grade Elev. Feet	Cover Grade Depth Inches	Finish Grade Elev. Feet	Finish Grade Depth Inches	Total Depth Inches	Desc.
25131	554363.3	695784.0	76.58	77.68	13.18	78.10	5.03	18.20	R
25132	554358.0	695787.8	74.18	75.19	12.14	75.61	5.02	17.16	R
25133	554349.5	695794.7	72.63	73.63	12.04	74.07	5.30	17.34	R
25134	554328.0	695806.8	70.67	71.88	14.52	72.39	6.17	20.69	R
25135	554329.4	695747.6	74.65	75.87	14.66	76.26	4.62	19.28	R
25137	554346.1	695737.8	81.35	82.49	13.78	82.88	4.69	18.47	R
25138	554354.7	695732.5	84.66	85.75	13.03	86.22	5.70	18.73	R
25140	554371.6	695722.4	92.60	93.73	13.55	94.11	4.57	18.12	R
25141	554353.8	695688.9	92.44	93.53	13.08	94.02	5.92	19.00	R
25143	554333.4	695695.0	84.59	85.70	13.26	86.09	4.66	17.92	R
25144	554321.4	695697.9	80.85	81.92	12.90	82.32	4.82	17.72	R
25145	554308.8	695701.0	76.75	77.82	12.85	78.34	6.18	19.03	R
25146	554287.8	695648.9	78.66	79.67	12.12	80.17	5.94	18.06	R
25147	554307.7	695650.8	82.15	83.17	12.14	83.67	6.07	18.22	R
25148	554325.5	695651.9	85.50	86.56	12.65	87.02	5.52	18.17	R
25150	554353.6	695654.0	92.61	93.75	13.66	94.34	7.07	20.72	R
25151	554357.8	695619.6	92.68	93.71	12.28	94.07	4.32	16.60	R
25153	554324.0	695608.5	84.80	86.05	15.01	86.41	4.31	19.32	R
25154	554302.3	695600.8	80.73	81.90	14.05	82.62	8.66	22.72	R
25155	554331.9	695566.4	84.62	85.74	13.45	85.85	1.21	14.66	R
25157	554351.9	695583.3	88.65	89.78	13.54	90.21	5.22	18.76	R
25158	554369.8	695598.5	92.28	93.46	14.09	93.84	4.63	18.72	R
25159	554388.7	695583.6	92.65	93.67	12.18	94.05	4.62	16.80	R
25160	554372.6	695553.5	88.57	89.62	12.58	89.98	4.27	16.85	R
25163	554402.5	695506.3	84.82	85.83	12.22	86.26	5.08	17.29	R
25165	554410.2	695527.7	88.58	89.60	12.19	89.92	3.82	16.01	R
25167	554424.3	695569.9	92.65	93.92	15.22	94.32	4.80	20.02	R
25168	554471.1	695553.4	92.40	93.61	14.53	93.96	4.14	18.67	R
25169	554463.9	695532.8	90.66	91.92	15.02	92.40	5.83	20.86	R
25170	554454.5	695506.3	88.24	89.49	14.98	89.86	4.45	19.43	R
25171	554450.1	695494.1	86.47	87.72	14.94	88.09	4.51	19.45	R
25172	554447.1	695483.4	84.65	85.92	15.29	86.29	4.50	19.79	R
25174	554486.9	695475.3	86.62	87.66	12.52	88.02	4.32	16.84	R
25175	554490.0	695485.6	88.46	89.48	12.17	89.83	4.27	16.44	R
25176	554501.6	695515.5	90.64	91.86	14.58	92.24	4.57	19.15	R
25177	554509.0	695539.9	92.25	93.30	12.59	93.71	4.88	17.47	R
25190	554759.8	695770.6	70.47	A		71.97		17.98	LIMREM
25195	554860.9	695611.7	71.20	A		72.56		16.32	R
25196	554480.9	695455.7	83.55	84.55	11.98	85.01	5.53	17.51	CUL
25203	554281.1	695619.3	78.66	79.78	13.43	80.17	4.68	18.11	CL
25204	554269.6	695645.8	76.63	77.69	12.71	78.16	5.60	18.31	CL
25205	554249.4	695692.6	74.63	75.72	13.02	76.24	6.23	19.25	CL
25206	554319.9	695737.7	74.53	75.70	13.99	76.17	5.68	19.67	C76
25207	554271.3	695708.4	74.61	75.75	13.76	76.26	6.06	19.82	C76
25208	554209.2	695691.8	74.65	75.63	11.86	76.08	5.40	17.26	C76
25209	554142.1	695688.5	74.52	75.65	13.52	76.16	6.11	19.63	C76
25211	554144.7	695653.5	76.66	77.71	12.58	78.15	5.22	17.80	C78
25212	554219.4	695659.2	76.56	77.60	12.48	77.98	4.46	16.94	C78
25213	554287.2	695677.8	76.66	77.72	12.80	78.28	6.66	19.46	C78
25215	554227.4	695634.3	78.55	79.58	12.35	80.07	5.88	18.23	C80
25216	554147.4	695617.0	78.66	79.67	12.14	80.24	6.82	18.96	C78
25217	554234.7	695610.8	80.71	81.84	13.55	82.20	4.30	17.84	R
25227	554535.2	695311.9	90.77	91.77	11.98	92.13	4.31	16.28	GRID
25228	554517.9	695360.1	84.87	86.01	13.70	86.66	7.75	21.46	GRID
25229	554493.9	695404.5	84.15	85.43	15.38	85.92	5.86	21.24	GRID
25266	554494.1	695472.3	85.60	86.83	14.80	87.05	2.64	17.44	SWL
25267	554507.4	695481.7	86.66	87.89	14.75	88.13	2.83	17.58	SWL
25268	554519.7	695509.9	89.16	90.46	15.58	90.76	3.62	19.20	SWL
25269	554532.2	695538.0	90.78	91.99	14.56	92.28	3.50	18.06	SWL
25270	554552.9	695529.0	91.01	92.08	12.74	92.58	6.10	18.84	SWL
25271	554543.9	695498.3	89.39	90.50	13.32	90.91	4.97	18.29	SWL
25272	554535.7	695469.1	86.42	87.49	12.89	87.92		18.00	SWL
25273	554521.0	695473.5	88.48	B		90.05		18.79	CLrd
25274	554531.7	695503.9	91.55	B		92.94		16.61	CLrd
25275	554542.3	695533.1	92.44	B		93.95		18.16	CLrd
25290	554560.7	695575.0	94.11	B		95.47		16.42	RD
25291	554579.4	695622.6	94.78	B		96.12		16.15	RD
25292	554570.3	695571.6	92.49	93.48	11.83	94.05	6.83	18.66	SWL
25293	554592.3	695616.4	93.49	94.50	12.12	95.06	6.70	18.82	SWL
25294	554624.5	695631.4	94.77	95.83	12.70	96.18	4.14	16.84	SWL
25295	554559.3	695651.6	93.42	94.73	15.65	95.27	6.50	22.15	SWL
25296	554566.4	695627.2	93.12	94.42	15.60	94.77	4.19	19.79	SWL
25297	554549.7	695579.8	92.59	93.80	14.57	94.16	4.27	18.84	SWL
25401	554583.5	695448.5	88.01	89.04	12.32	89.36	3.84	16.20	R
25402	554588.6	695461.6	91.81	92.82	12.07	93.21	4.66	16.73	R
25403	554632.3	695437.6	88.09	89.34	14.92	89.72	4.56	19.48	R
25404	554652.0	695449.3	92.00	93.05	12.60	93.48	5.16	17.76	R
25405	554661.6	695441.6	88.10	89.28	14.16	89.66	4.58	18.74	R
25406	554676.6	695429.1	88.82	89.99	14.00	90.35	4.30	18.30	R
25407	554707.2	695424.9	92.62	93.65	12.34	94.01	4.42	16.75	R
25408	554723.8	695414.7	91.13	92.15	12.29	92.64	5.92	18.20	R
25443	554473.3	695884.3	70.09	71.15	12.80	71.53	4.46	17.27	R

POINT DESCRIPTORS

A	AERO	HYD	HYDRANT
BEOP	BACK EDGE OF PLANTER	K	KOSTER
BLDG	BUILDING	LIM	LIMIT
BNDY	BOUNDARY	MW	MONITOR WELL
BR	BREAK IN SLOPE	P	PEBCO (NOW WJP REALTY TRUST)
C##	CONTOUR INTERVAL	PLNTR	PLANTER
CG	COVER GRADE	PC	POINT OF CURVATURE
CHNL	CHANNEL	POC	POINT ON CURVE
CL	CENTERLINE	PT	POINT OF TANGENCY
CLF	CHAIN LINK FENCE	PX	PX REALTY
CONT	CONTOURS	R	RANDOM
COR	CORNER	RD	ROAD
CUL	CULVERT	REM	REMEDIATION
CURBa	ASPHALT CURB	RPRP	RIPRAP
CURBg	GRANITE CURB	SG	SUBGRADE
D	DAGATA	SL	SLOPE
DTCH	DITCH	SWL	SWALE
E.	EDGE OF	TOB	TOP OF BANK
E.C.	EDGE OF CONCRETE	TOE	TOE OF SLOPE
E.P.	EDGE OF PAVEMENT	TOP	TOP OF SLOPE
EX	EXCAVATION	TRAN	TRANSITION ZONE
EZ	EXCLUSION ZONE	UC	UTILITY CORRIDOR
FAB	FABRIC	UCN	NORTH UTILITY CORRIDOR
FG	FINISH GRADE	UP	UTILITY POLE
G	GENERAL POINT	WG	WATERGATE
GUY	GUY WIRE	RRBD	RAILROAD BED

TABLE REMARKS

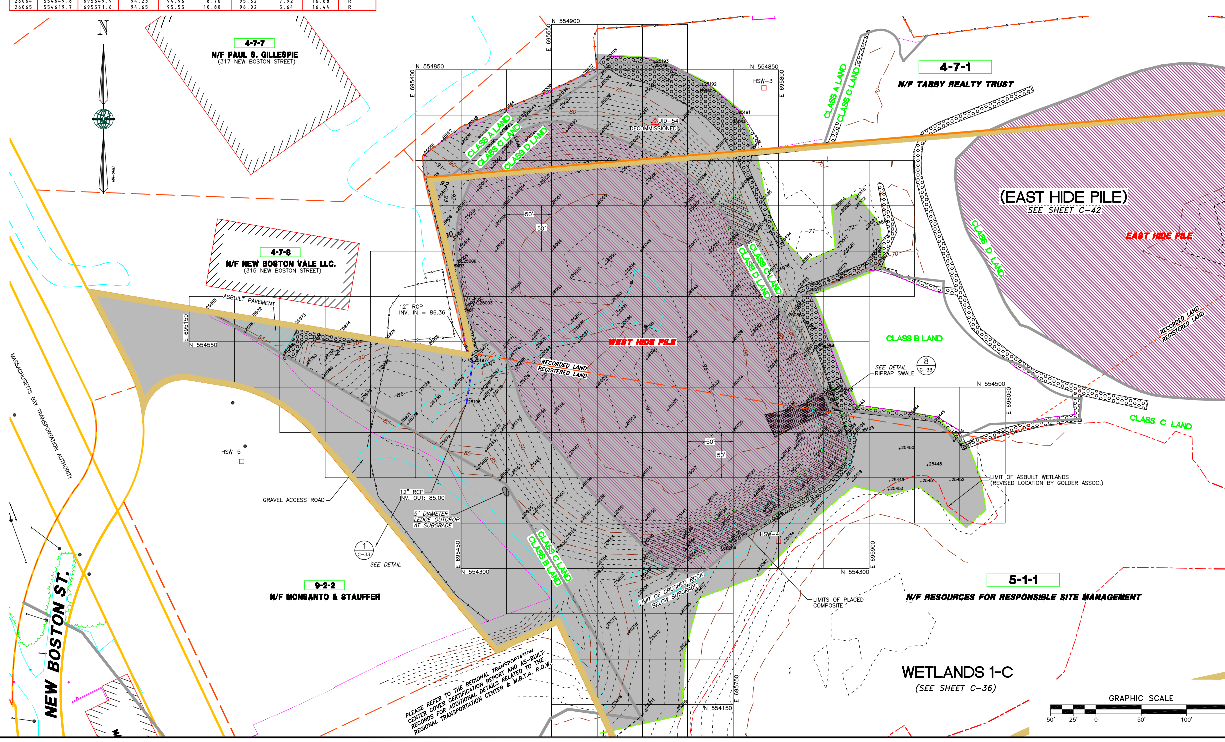
A	IN RIP RAP– SUBGRADE AND FINISH GRADE ONLY
B	IN GRAVEL ROAD– SUBGRADE AND FINISH GRADE ONLY
C	CULVERT– ONLY SUBGRADE AND FINISH GRADE
D	REMEDIATION IN PROGRESS
E	UNABLE TO COLLECT
F	ON CLAY BERM– NO SUBGRADE
G	BOX CULVERT SUBGRADE ONLY
H	TOP OF BANK OF UTILITY CORRIDOR– SUBGRADE ONLY
I	CREATED WETLANDS STREAM– SEE COVER GRADE
J	FINISH GRADE ON CONCRETE WEIR
K	NO "TEWKSBURY" LOAM APPLIED
L	NOT COLLECTED
M	OUTSIDE LIMIT OF CLAY GRADE
N	UNDER WATER
P	AT TRANSITION– NO COVER GRADE
Q	IN GRAVEL ROAD– SEE ADJACENT SUBGRADE
R	IN GRAVEL ROAD– SEE ADJACENT FINISH GRADE
S	IN GRAVEL ROAD AT UTILITY CORRIDOR– NO SUBGRADE

RESTRICTED AREAS BY CLASSES OF LAND

CLASS OF LAND	DESCRIPTION
A	MAY CONTAIN CONTAMINATED GROUNDWATER
B	MAY CONTAIN CONTAMINATED GROUNDWATER, AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B.
C	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.
D	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

LEGEND

- BOUNDARY LINE
- RIGHT–OF–WAY
- ABUTTING PROPERTY LINES
- ASPHALT, CONCRETE, GRANITE CURB
- TRANSITION ZONE
- LAND CLASS LINE
- N 551,000 GRID LINE
- EDGE OF EXISTING PAVEMENT
- LIMIT OF GEOTEXTILE
- A.T.&T. FIBER OPTIC CABLE
- TOE OF SLOPE
- TOP OF SLOPE
- LIMIT CHAIN LINK FENCE
- EDGE OF ASBUILT GRAVEL ROAD
- BACK EDGE OF PLANTER
- EDGE OF PROPOSED PAVEMENT
- EXISTING EASEMENT
- ASBUILT CULVERT
- LIMIT OF TREELINE
- EXISTING CONCRETE STRUCTURE
- ASBUILT FINISH GRADE CONTOUR 5' INTERVAL
- ASBUILT FINISH GRADE CONTOUR 1' INTERVAL
- OHW OVERHEAD WIRES
- UGG UNDERGROUND GAS LINE
- LIMITS OF EXISTING EASEMENTS
- EDGE OF EXISTING BUILDINGS
- AREA OF LEDGE
- LIMITS OF GEOCOMPOSIT
- AREA OF ENGINEERED COVER (COMPLIES WITH 100% DESIGN PLANS UNLESS OTHERWISE STATED)
- (33) ASBUILT COVER TYPE
- TEST PIT
- MONITOR WELL
- HYDRANT
- GATE VALVE
- CATCH BASIN (SQUARE)
- CATCH BASIN (ROUND)
- DRAIN MANHOLE
- SEWER MANHOLE
- UTILITY POLE
- GUY WIRE
- +14000 ASBUILT POINT NO. & LOCATION
- GAS METER
- GAS SHUT OFF
- WATER SHUT OFF
- WATER CONTROL BOX
- SIGN
- BOLLARD
- TELEPHONE MANHOLE
- BORING LOCATION
- MICRO WELL LOCATION
- PIEZOMETER LOCATION
- SOIL SAMPLE LOCATION
- STAFF GUAGE LOCATION
- TENSIOMETER LOCATION
- UID LOCATION
- MONITORING WELL LOCATION
- HIDE PILES BASED ON CONSENT DECREE
- LIMITS OF RIPRAP = 6" STONE



REV.	DATE	DESCRIPTION		DR	CK
I	9/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS		JF	MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

PREPARED FOR:
ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

PREPARED BY:
MERIDIAN Land Services, Inc.
ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

DESIGNED BY:
Golder Associates
Manchester, New Hampshire
400 Commercial Street
Manchester, N.H. USA 03101
603-668-0880 • FAX 603-668-1199

PROJECT RECORD LOT (WEST HIDE PILE)

RECORD POINTS, TOPOGRAPHY, DRAINAGE & LIMITS OF ENGINEERED COVER

INDUSTRI-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS

SCALE: 1" = 50'
AUGUST 8, 2000

DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 290022113.dwg
DO NOT SCALE DRAWING

C-31
SHEET NO.
PROJECT: 2900.00
SHEET 3 OF 5

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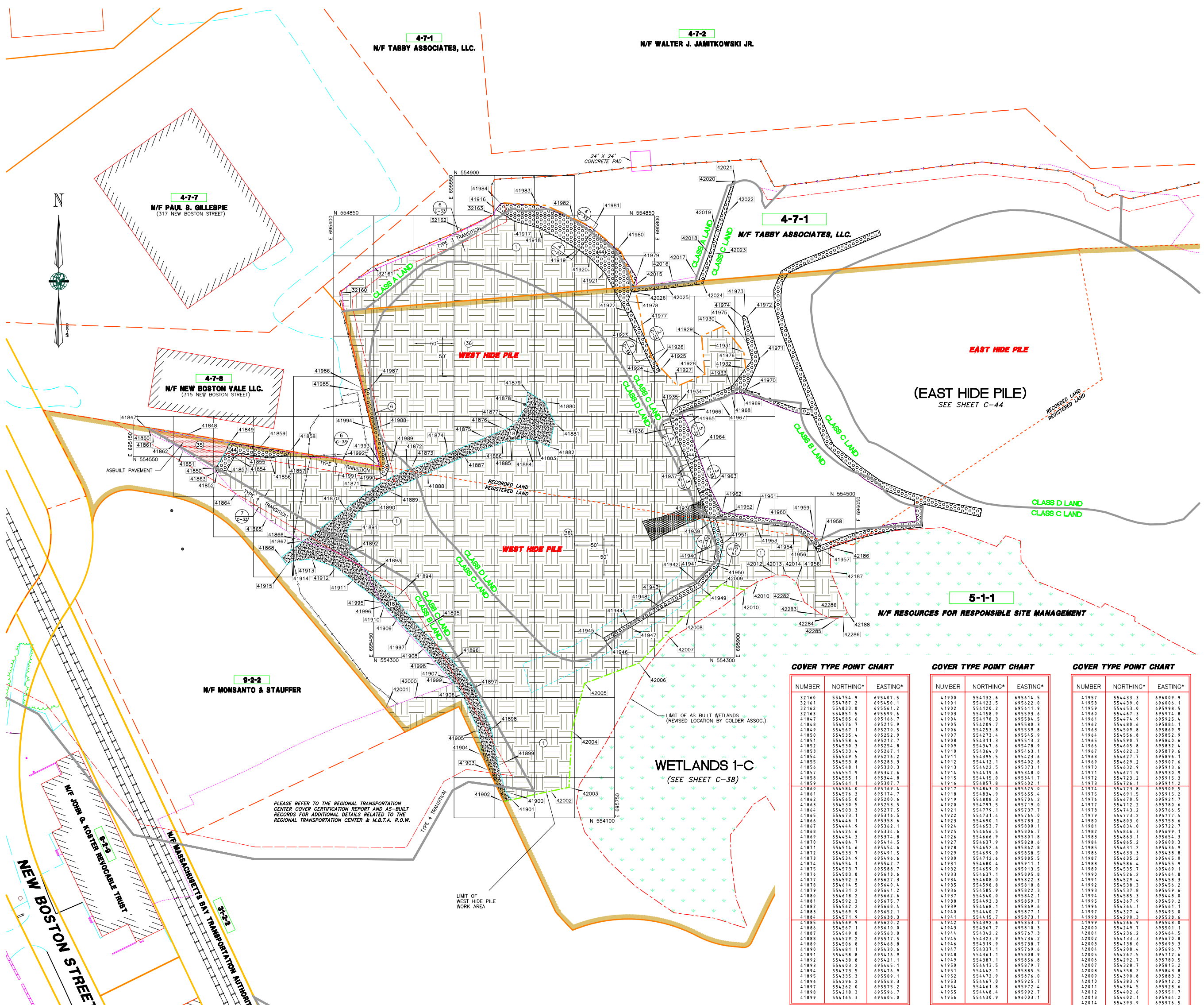
COVER TYPES (ENGINEERED)

AREA	ORIGINAL CONDITION	COVER TYPE
1	VARIES	ABOVE GRADE PERMEABLE COVER
2	VARIES	AT GRADE PERMEABLE COVER
3	PLANTER WITH GRASS SHRUBS, SMALL TREES	AT GRADE PERMEABLE COVER
6	DRAINAGE SWALE	GRAVEL/COBBLE LINED
7	DRAINAGE SWALE	CONCRETE CULVERT (BENEATH EAST-CENTRAL HIDE PILE REMEDIATED SLOPE)
9	WETLANDS	ABOVE GRADE PERMEABLE COVER (WETLANDS REMEDIATION)
10	WETLANDS	DREDGE SEDIMENT, PLACE PERMEABLE COVER (WETLANDS REMEDIATION)
11	EAST HIDE PILE	IMPERMEABLE COVER (EAST HIDE PILE REMEDIATION)
12	VARIES	ABOVE GRADE PERMEABLE COVER (EXTENT OF SOUTH HIDE PILE REMEDIATION)
13	SOUTH HIDE PILE	ABOVE GRADE PERMEABLE COVER
14	EAST CENTRAL HIDE PILE	ABOVE GRADE PERMEABLE COVER
15	DEPRESSION VEGETATION VARIES	AT GRADE PERMEABLE COVER
16	RAILROAD LINES	RAILROAD COVER
17	VARIES	PLACE TRENCH DRAIN
18	VARIES	GRAVEL ACCESS ROAD
19	CHROMIUM LAGOONS	FILL, ABOVE GRADE PERMEABLE COVER
20	CONCRETE FOUNDATION	CLEAR, CLEAN & PATCH
22	PAVED	REGRADE, ABOVE GRADE ASPHALT
23	VARIES	PLACE CULVERT
24	CULVERT	EXTEND CULVERT
25	VARIES	SEE NOTE 4 (SHEET 11-3D) (ON REFERENCE PLAN 2)
26	VARIES	ABOVE GRADE ASPHALT COVER
27	VARIES	EXCAVATE, STORMWATER STORAGE, PLACE 16" FILL
28	DRAINAGE CHANNEL	DREDGE 16" SEDIMENT, PLACE GRAVEL/COBBLE LINING
29	EXISTING MDC SEWER SERVICE	RAISE MANHOLES
31	DRAINAGE SWALE	DREDGE 16", PLACE GRAVEL/COBBLE (GROUNDWATER RECHARGE BASIN)
32	VARIES	AT GRADE COVER (GRAVEL SURFACE)
33	VARIES	ABOVE GRADE COVER (GRAVEL SURFACE)
34	VARIES	GROUNDWATER TREATMENT PLANT
35	VEGETATION VARIES	AT GRADE ASPHALT COVER
36	WEST HIDE PILE	ABOVE GRADE PERMEABLE COVER
37	VARIES	GRAVEL/COBBLE LINED CREATED WETLAND STREAM
38	VARIES	DETENTION BASIN REMEDIATION IMPERMEABLE COVER
44	VARIES	D_{50} – 6" RIPRAP



COVER TYPE POINT CHART

NUMBER	NORTHING*	EASTING*
32160	554754.9	695407.5
32161	554787.2	695450.1
32162	554833.0	695561.2
32163	554851.5	695599.6
41847	554585.6	695166.7
41848	554576.7	695215.9
41849	554567.1	695270.5
41850	554535.4	695252.9
41851	554558.4	695212.7
41852	554530.3	695254.8
41853	554533.4	695267.1
41854	554549.5	695276.2
41855	554553.8	695283.3
41856	554548.1	695320.3
41857	554551.9	695342.6
41858	554555.1	695344.8
41859	554561.1	695307.7
41860	554584.0	695169.4
41861	554576.3	695174.7
41862	554565.0	695200.6
41863	554530.5	695253.5
41864	554503.3	695277.5
41865	554473.1	695316.5
41866	554446.1	695358.6
41867	554444.9	695362.1
41868	554424.6	695334.6
41869	554454.3	695374.8
41870	554484.7	695414.5
41871	554514.6	695454.6
41872	554533.7	695491.5
41873	554534.9	695496.6
41874	554554.1	695542.7
41875	554573.7	695588.7
41876	554583.8	695613.6
41877	554592.3	695627.3
41878	554614.5	695640.4
41879	554631.2	695641.2
41880	554618.2	695662.6
41881	554592.3	695675.7
41882	554562.2	695668.4
41883	554569.9	695652.1
41884	554571.9	695638.3
41885	554569.9	695620.2
41886	554567.1	695610.0
41887	554549.8	695563.0
41888	554529.2	695517.5
41889	554506.8	695468.8
41890	554481.1	695430.6
41891	554458.8	695416.9
41892	554430.8	695421.1
41893	554403.2	695445.1
41894	554373.5	695476.9
41895	554335.3	695509.1
41896	554296.2	695548.3
41897	554262.0	695575.2
41898	554210.3	695596.7
41899	554165.3	695605.0

COVER TYPE POINT CHART

NUMBER	NORTHING*	EASTING*
41900	554132.6	695614.5
41901	554122.5	695622.0
41902	554120.2	695611.9
41903	554158.9	695593.6
41904	554178.3	695584.5
41905	554209.7	695580.3
41906	554253.8	695559.8
41907	554273.4	695545.9
41908	554311.3	695513.2
41909	554347.6	695478.9
41910	554364.9	695463.1
41911	554395.5	695423.6
41912	554412.1	695402.8
41913	554422.5	695373.1
41914	554419.6	695348.0
41915	554415.0	695341.7
41916	554857.8	695602.1
41917	554843.0	695625.0
41918	554834.9	695655.4
41919	554808.3	695704.2
41920	554797.5	695719.0
41921	554779.1	695737.7
41922	554731.4	695764.0
41923	554690.1	695783.2
41924	554653.7	695800.1
41925	554656.5	695806.7
41926	554666.9	695801.8
41927	554637.9	695828.6
41928	554652.6	695862.8
41929	554699.9	695858.5
41930	554712.6	695885.5
41931	554680.4	695911.1
41932	554659.9	695913.5
41933	554637.1	695895.8
41934	554608.0	695822.3
41935	554598.8	695818.8
41936	554585.9	695822.3
41937	554540.0	695842.1
41938	554493.3	695859.7
41939	554468.1	695869.6
41940	554440.7	695877.1
41941	554415.7	695873.1
41942	554392.6	695853.7
41943	554367.7	695810.3
41944	554342.2	695767.3
41945	554323.9	695736.2
41946	554319.9	695738.7
41947	554337.1	695769.6
41948	554361.1	695808.9
41949	554387.1	695856.8
41950	554413.5	695879.7
41951	554442.1	695885.5
41952	554472.9	695876.0
41953	554467.0	695925.7
41954	554461.8	695972.4
41955	554448.4	695992.7
41956	554430.9	696003.1

COVER TYPE POINT CHART

NUMBER	NORTHING*	EASTING*
41957	554433.3	696009.9
41958	554439.0	696006.1
41959	554453.0	695998.5
41960	554467.3	695974.8
41961	554474.9	695925.4
41962	554480.6	695884.1
41963	554509.8	695869.9
41964	554556.8	695852.9
41965	554590.7	695840.6
41966	554605.8	695832.4
41967	554622.3	695879.6
41968	554627.7	695896.1
41969	554629.2	695907.6
41970	554632.9	695913.6
41971	554671.9	695930.9
41972	554723.2	695915.3
41973	554726.1	695911.2
41974	554723.8	695909.5
41975	554691.5	695915.2
41976	554670.5	695921.7
41977	554712.2	695780.6
41978	554743.2	695766.5
41979	554773.2	695777.5
41980	554803.0	695758.6
41981	554834.0	695722.7
41982	554846.3	695699.1
41983	554863.1	695654.3
41984	554865.2	695608.3
41985	554631.2	695436.9
41986	554633.3	695438.8
41987	554635.2	695445.0
41988	554586.4	695455.9
41989	554535.7	695469.1
41990	554526.2	695464.8
41991	554529.4	695458.3
41992	554538.3	695456.2
41993	554537.8	695459.6
41994	554585.3	695448.0
41995	554367.9	695459.2
41996	554364.1	695461.1
41997	554327.4	695495.0
41998	554290.3	695528.6
41999	554266.9	695548.0
42000	554249.7	695501.1
42001	554236.2	695464.5
42002	554133.3	695670.8
42003	554138.0	695693.3
42004	554208.4	695696.7
42005	554267.5	695712.6
42006	554292.7	695780.5
42007	554328.7	695815.2
42008	554358.2	695843.8
42009	554390.8	695883.2
42010	554383.9	695912.2
42011	554394.5	695928.6
42012	554402.6	695951.7
42013	554402.1	695964.2
42014	554393.9	695976.5
42186	554436.4	696019.0
42187	554406.4	696019.2
42188	554356.2	696040.1
42282	554368.6	695986.6
42283	554352.7	696008.8
42284	554349.2	696018.6
42285	554348.6	696028.0
42286	554351.3	696034.7

* HORIZONTAL POSITION REPRESENTED BY DATA LISTED ABOVE WAS DEVELOPED FROM VARIOUS SOURCES. (SEE NOTES 3 & 4 ON SHEET 1)

COVER TYPES (EQUIVALENT)

AREA	ORIGINAL CONDITION	EQUIVALENT COVER TYPE
4	PAVED	EQUIVALENT COVER
5	BUILDING	EQUIVALENT COVER
8	BEDROCK DRAINAGE SWALE	BLAST/EXCAVATE CHANNEL EQUIVALENT COVER
21	BEDROCK OUTCROP	GRUB & CLEAN EQUIVALENT COVER
30	STACK	EQUIVALENT COVER

RESTRICTED AREAS BY CLASSES OF LAND

CLASS OF LAND	DESCRIPTION
A	MAY CONTAIN CONTAMINATED GROUNDWATER
B	MAY CONTAIN CONTAMINATED GROUNDWATER, AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B.
C	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.
D	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

PROJECT RECORD LOT (WEST HIDE PILE)

COVER TYPES AND TRANSITIONS

INDUSTRI-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS

AUGUST 8, 2000

SCALE: 1" = 50'

C-32

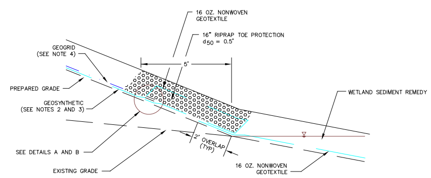
SHEET NO.

PROJECT: 2900.00

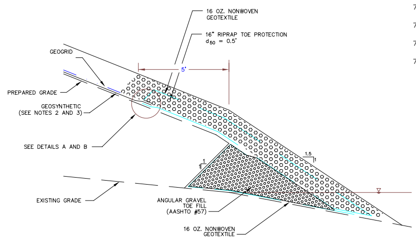
SHEET 4 OF 5

ROUX ASSOCIATES, INC.

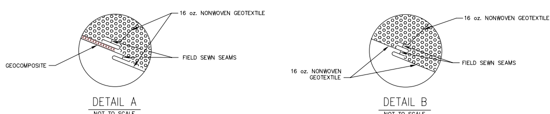
Golder Associates



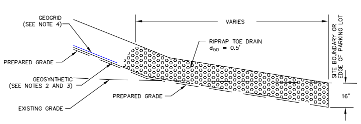
2 / C-33 TYPICAL WETLAND TIE-IN DETAIL
NOT TO SCALE



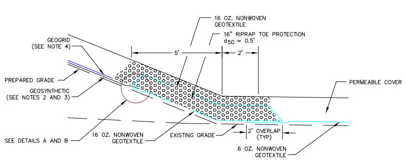
3 / C-33 TYPICAL WETLAND TIE-IN DETAIL
NOT TO SCALE



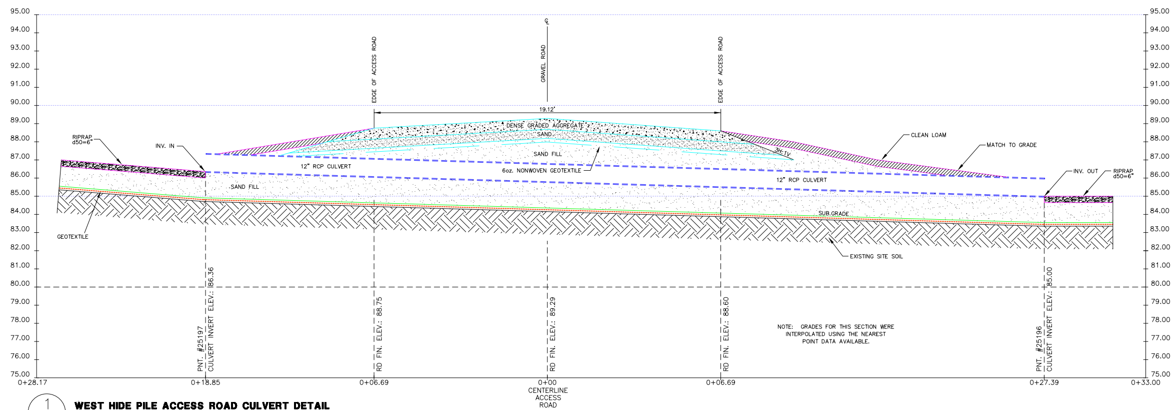
TYPICAL OVERLAP TIE-IN DETAILS
NOT TO SCALE



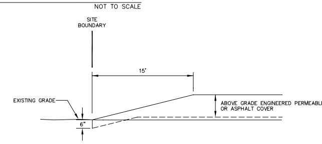
4 / C-33 TYPICAL RIPRAP TOE DRAIN DETAIL
NOT TO SCALE



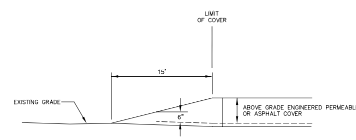
5 / C-33 TYPICAL HIDE PILE TIE-IN DETAIL
NOT TO SCALE



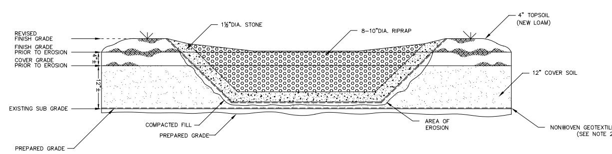
1 / C-33 WEST HIDE PILE ACCESS ROAD CULVERT DETAIL
NOT TO SCALE



6 / C-33 TYPICAL TYPE 3 TRANSITION
NOT TO SCALE



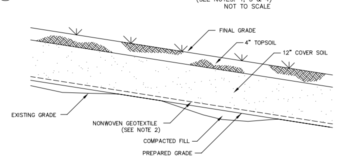
7 / C-33 TYPICAL TYPE 4 TRANSITION
NOT TO SCALE



8 / C-33 TYPICAL WEST HIDE PILE RIPRAP SWALE
NOT TO SCALE

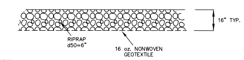
COVER TYPES

1 & 36 ABOVE GRADE ENGINEERED PERMEABLE COVER
(SEE NOTES: 1, 3 & 4)
NOT TO SCALE



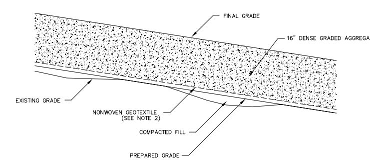
COVER TYPE

6 ENGINEERED DRAINAGE SWALE/COBBLE LINED
NOT TO SCALE



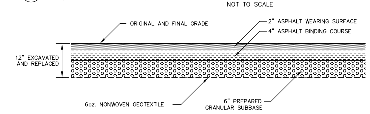
COVER TYPE

18 GRAVEL ACCESS ROAD
NOT TO SCALE



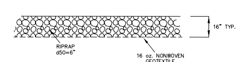
COVER TYPE

35 AT GRADE ENGINEERED ASPHALT COVER
NOT TO SCALE



COVER TYPE

44 ENGINEERED RIPRAP TOE PROTECTION
NOT TO SCALE



LEGEND

X / C-33
DETAIL/CROSS SECTION DESIGNATION
SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

NOTES

1.) SEE SPECIFICATIONS FOR DETAILS AND MATERIALS USED.

2.) FOR SLOPES FLATTER THAN 25% A 16oz. NONWOVEN GEOTEXTILE WAS INSTALLED ON HIDE PILES AND A 6oz. NONWOVEN GEOTEXTILE WAS INSTALLED ELSEWHERE.

3.) FOR SLOPES 25% OR STEEPER, A GEOSYNTHETIC DRAIN WAS USED AS FOLLOWS:

a. ON HIDE PILES, A GEOCOMPOSITE DRAIN WAS EXTENDED FROM THE TOE OF SLOPE A DISTANCE EQUAL TO A 10 FOOT CHANGE IN ELEVATION. A 16oz. NONWOVEN GEOTEXTILE WAS USED ELSEWHERE AND FIELD SEWN WITH THE GEOCOMPOSITE.

b. IN AREAS OTHER THAN HIDE PILES, A 16oz. NONWOVEN GEOTEXTILE WAS USED THROUGHOUT.

4.) FOR SLOPES STEEPER THAN 33%, A GEOGRID WAS PLACED DIRECTLY ABOVE THE GEOSYNTHETIC AND EXTENDED A DISTANCE OF 10 FEET BEYOND THE CREST OF THE SLOPE. FOR SLOPES 50% OR STEEPER A RIPRAP FACING WAS PLACED WITHOUT GEOGRID.

5.) PLEASE REFER TO THE REGIONAL TRANSPORTATION CENTER COVER CERTIFICATION REPORT AND AS-BUILT RECORDS FOR ADDITIONAL DETAILS RELATED TO THE REGIONAL TRANSPORTATION CENTER.

REV.	DATE	DESCRIPTION		DR	CK
I	9/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS	JF	MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

PREPARED FOR:
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

PREPARED BY:
MERIDIAN Land Services, Inc.
LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

DESIGNED BY:
Golder Associates
Manchester, New Hampshire
400 Commercial Street
Manchester, N.H. USA 03101
603-668-0880 • FAX 603-668-1199

PROJECT RECORD LOT (WEST HIDE PILE)

DETAILS AND TRANSITIONS

INDUSTRI-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS

AUGUST 8, 2000

SCALE: 1" = NONE

DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 290022115.dwg
DO NOT SCALE DRAWING

C-33
SHEET NO.
PROJECT: 2900.00
SHEET 5 OF 5

Sep 29, 2008 – 7:01am dbh Land Desktop 2004 – LDT4
H:\mis\02900–0–AB\2900.22\AS-BUILTS\0–PARCEL–1\

INDUSTRI-PLEX SITE
OU-1 COVER CERTIFICATION REPORT
LOCUS OF TAX MAP LOT 5-1-1 (AKA IC-27)
RESOURCES FOR RESPONSIBLE SITE MANAGEMENT, INC., AS TRUSTEE FOR THE INDUSTRI-PLEX SITE CUSTODIAL TRUST
(WETLANDS 1C - NORTH & SOUTH PONDS/ENHANCED & UNDEVELOPED AREAS)

RECORD DRAWINGS

WOBURN, MASSACHUSETTS
AUGUST 8, 2000

REFERENCE PLANS:

1. "REGIONAL TRANSPORTATION CENTER– WOBURN, MASSACHUSETTS" ALTERNATE COVER DESIGN– ISSUED FOR EPA/DEP APPROVAL, DATE ISSUED: MAY 16, 1995 LATEST ISSUE: JULY 26, 1996, BY VANASSE HANGEN BRUSTLIN, INC., WATERTOWN, MA

2. "INDUSTRIAL–PLEX SITE – WOBURN, MASSACHUSETTS – 100% DESIGN REPORT, PART I – REMEDIAL WORK FOR SOIL, SEDIMENTS AND AIR– VOLUME 7 OF 8", PREPARED BY GOLDER ASSOCIATES, MT. LAUREL, N.J., APRIL 25, 1992.

3a. "SUBDIVISION PLAN OF LAND IN WOBURN – PERFORMED BY VANASSE HANGEN BRUSTIN, INC. SURVEYORS – APRIL 6, 1999", SCALE 1" = 80', CERT. OF TITLE NO. 215236 BOOK 1206 PAGE 86, RECORDED AS PLAN NO. 7312–2 ON JANUARY 18, 2000 AT SOUTH REGISTRY DISTRICT OF MIDDLESEX COUNTY

3b. "SUBDIVISION PLAN OF LAND IN WOBURN – PERFORMED BY MASSPORT SURVEY UNIT – OCTOBER 21, 1996", SCALE 1"=300', CERT. OF TITLE NO. 209396 BOOK 1188 PAGE 186, RECORDED AS PLAN NO.7312–Z ON JANUARY 18, 2000 AT SOUTH REGISTRY DISTRICT OF MIDDLESEX COUNTY.

3c. "PLAN OF EASEMENT IN – WOBURN, MASSACHUSETTS – TO BE CONVEYED TO BOSTON EDISON COMPANY." SCALE 1"=100' DATED MARCH 21, 1970 BY SCHOFIELD BROTHERS, INC. (RECORDED IN SRDMC AS PLAN #731 OF 1970).

4. "INDEX PLAN OF – LAND COURT SUBDIVISION – IN – WOBURN, MA" PREPARED FOR THE NORTHEAST REGIONAL TRANSPORTATION CENTER BY MASSACHUSETTS PORT AUTHORITY, DATED OCTOBER 21, 1996, SHEETS 1–6. LCC 7312.

5. "THE COMMONWEALTH OF MASSACHUSETTS – DEPARTMENT OF HIGHWAYS – PLAN AND PROFILE OF – ROUTE I–93 INTERCHANGE – IN THE CITY OF – WOBURN – MIDDLESEX COUNTY", SHEETS 18–23 OF 107, SCALE 1"=40', PREPARED BY VHB, INC. PROJECT NO. 072310.

6. "PLAN OF LAND IN – WOBURN, MA. – SHOWING REDIVISION OF LOTS – A2, A3 & A4", SCALE 1" = 80' DATED DECEMBER 30, 1986. PREPARED FOR AUGUSTINE P. SHEEHY BY GHR ENGINEERING ASSOCIATES, INC. RECORDED AT MIDDLESEX REGISTRY OF DEEDS, SOUTHERN DISTRICT CAMBRIDGE, MASS. ON FEB. 12, 1987 AS PLAN NO. 200, DOC. 246 BOOK 17860, PAGE 528.

7. "THE COMMONWEALTH OF MASSACHUSETTS – PLAN OF ROAD – IN THE CITY OF – WOBURN – MIDDLESEX COUNTY – ALTERED AND LAID OUT AS A STATE HIGHWAY – BY THE DEPARTMENT OF HIGHWAYS", SCALE 1" = 40' DATED MAY 21, 1997, ON FILE AT THE COMMONWEALTH OF MASSACHUSETTS, DEPARTMENT OF HIGHWAYS AS LAYOUT NO. 7376, PROJECT FILE NO. 072310.

8. "SUBDIVISION – PLAN OF LAND – IN WOBURN, MASS.", SCALE 1" = 100' DATED JULY 8, 1997 AND REVISED SEPT. 18, 1997. PREPARED FOR JAMES BOND REALTY TRUST BY EDWARD J. FARRELL. RECORDED AT MIDDLESEX REGISTRY OF DEEDS, SOUTHERN DISTRICT CAMBRIDGE, MASS. ON OCT 6, 1997 AS PLAN NO. 1065, DOC. NO. 86, BOOK 27743 PAGE 419.

SURVEY CONTROL NETWORK POINTS

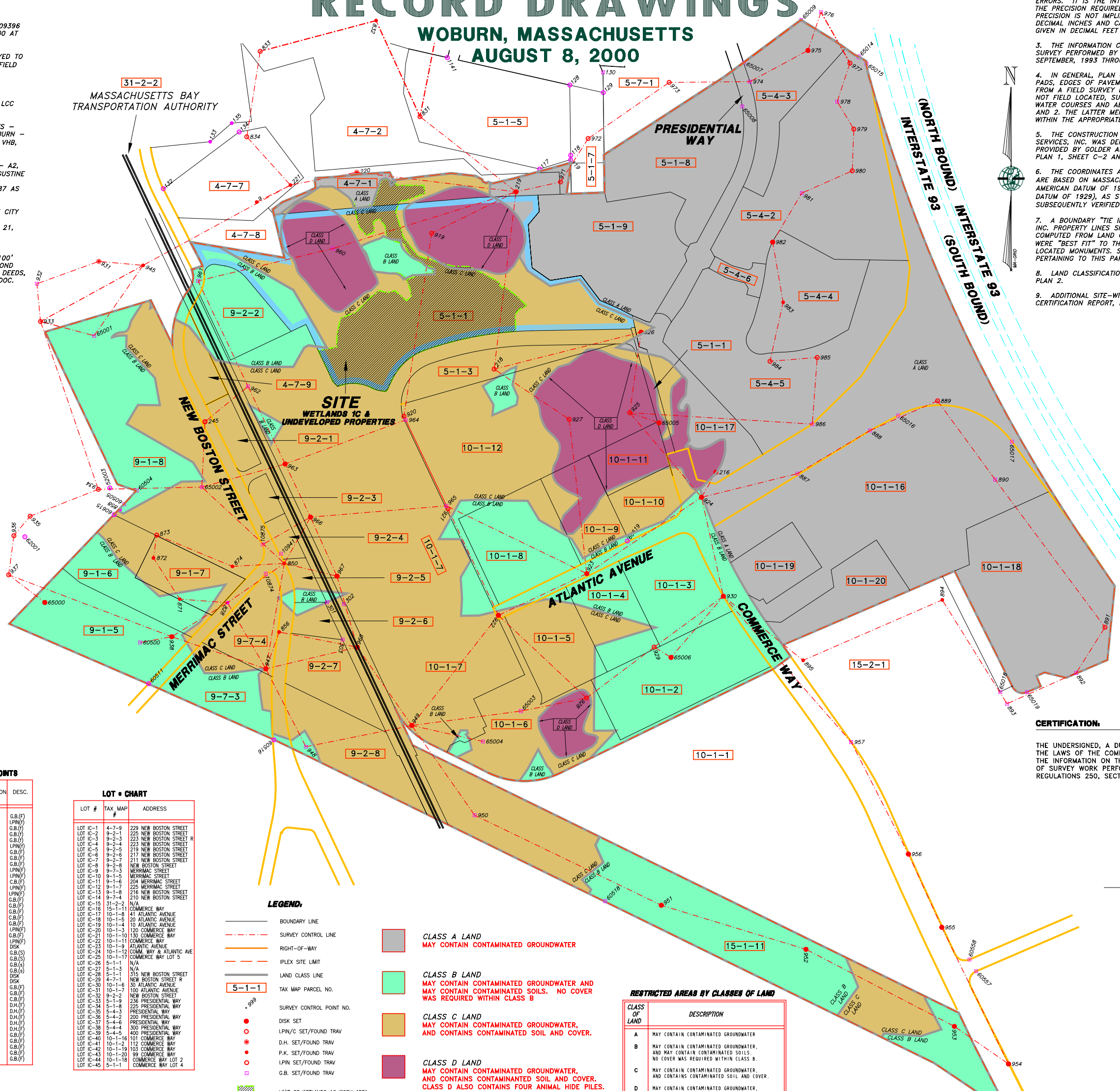
POINT #	NORTHING (FEET)	EASTING (FEET)	ELEVATION (FEET)	DESC.
8	555829.94	696197.41	88.93	PIN/C(s)
9	554787.93	695334.79	93.29	MAGNL(s)
117	554935.71	696605.05	119.44	I.PIN(f)
118	554997.69	696744.31	124.49	I.PIN(f)
119	554977.42	696743.93	125.72	I.PIN(f)
120	556005.46	696613.05	95.27	C.B.(f)
128	555312.88	696740.29	115.51	I.PIN(f)
129	555279.16	696890.59	117.47	I.PIN(f)
130	555370.20	696889.50	118.61	C.B.(f)
132	554847.71	694915.95	78.43	I.PIN(f)
133	555058.90	695126.18	96.01	P.K.(f)
134	555102.46	695256.34	96.55	I.PIN(f)
135	555142.01	695222.63	90.28	P.K.(f)
157	555902.41	696284.78	90.59	C.B.(f)
216	553575.07	697396.19	72.34	DISK
218	554038.23	696400.64	91.30	I.PIN(s)
219	554833.75	696498.97	113.51	DISK
220	554921.67	695784.06	73.06	D.H.(f)
221	554863.96	695486.38	98.35	P.K.(f)
245	553801.79	695102.81	70.74	PIN/C(s)
301	552991.99	695650.71	67.70	G.B.(f)
302	552983.08	695726.35	68.00	G.B.(f)
303	552824.40	695720.82	66.92	G.B.(f)
751	550314.48	698866.23	58.42	G.B.(f)
752	550363.63	698811.51	57.52	G.B.(f)
754	550089.43	697819.49	53.51	G.B.(f)
755	550155.77	697925.27	54.70	G.B.(f)
756	550192.19	698080.56	56.08	PIN/C(f)
828	552989.66	695204.98	72.68	RRSPK(S)
831	555171.27	696067.95	92.16	PIN/C(s)
832	555602.29	695870.66	86.06	P.K.(s)
833	555464.48	695350.57	78.24	PIN/C(s)
834	555080.77	695290.39	96.82	PIN/C(s)
850	553166.01	695458.74	66.79	P.K.(f)
857	554268.42	694914.00	73.19	PIN/C(S)
858	553407.27	694721.18	73.66	P.K.(S)
871	553005.63	694989.59	75.27	P.K.(s)
872	553190.49	694871.47	74.38	P.K.(s)
873	553293.14	694886.21	73.74	PIN/C(s)
874	553152.45	695225.83	72.96	P.K.(s)
887	553569.05	697762.19	74.67	G.B.(s)
888	553762.69	698088.18	75.46	G.B.(F)
889	553895.58	698391.10	74.41	PIN/C(s)
890	553542.21	698649.64	72.97	G.B.(S)
891	552879.28	699142.48	69.34	PIN/C(s)
892	552674.56	699013.57	68.58	G.B.(S)
893	552536.04	698702.70	69.67	G.B.(S)
894	553002.10	698412.19	69.40	MAGNL(s)
895	552730.89	697787.70	67.50	MAGNL(s)
919	554648.09	696120.30	106.02	PIN/C(s)
920	553826.01	695995.76	79.40	PIN/C(s)
921	553411.21	696193.36	78.92	PIN/C(s)
922	552932.88	696420.08	71.72	DISK
923	553120.20	696816.46	72.78	DISK
924	553462.61	697331.77	68.39	DISK
925	553842.55	697009.22	94.88	PIN/C(s)
926	554203.87	697060.28	79.00	DISK
927	553812.75	696737.39	107.69	PIN/C(s)
928	552561.74	696815.28	88.15	PIN/C(s)
929	552790.55	697119.09	71.75	PIN/C(s)
930	553018.55	697429.53	68.02	DISK
931	554521.49	694626.27	87.39	D.H.(f)
932	554421.26	694348.31	101.39	G.B.(f)
933	554251.87	694364.55	90.95	PIN/C(s)
934	553498.56	694623.81	69.94	PIN/C(s)
935	553378.01	694317.96	72.10	PIN/C(s)
936	553290.51	694245.09	81.03	PIN/C(s)
937	553114.85	694221.58	97.94	PIN/C(s)
938	552836.93	694953.72	80.60	DISK
944	550614.66	697637.80	N/A	G.B.(F)
945	554503.77	694825.96	74.68	P.K.(f)
947	552692.72	695376.15	65.92	DISK
948	552343.09	695555.77	63.57	G.B.(s)
949	552438.47	696030.92	71.73	DISK
950	552035.73	696313.53	68.40	G.B.(s)
951	551631.65	697151.14	65.87	DISK
952	551433.89	697800.32	73.68	DISK
953	551087.91	698466.50	63.64	DISK
954	550919.29	698709.73	60.45	DISK
955	551532.44	698410.23	63.71	DISK
956	551861.31	698260.16	65.21	DISK
957	552364.26	698003.18	67.73	G.B.(F)
960	554579.37	695677.56	96.32	G.B.(s)
961	554434.15	695071.84	85.91	G.B.(s)
962	553960.20	695295.87	79.76	G.B.(s)
963	553612.09	695462.70	78.81	DISK
964	553810.04	696003.71	79.67	G.B.(s)
965	553424.46	696186.34	79.67	G.B.(s)
966	553373.67	695576.30	77.68	DISK
967	553108.66	695695.24	76.92	DISK
968	552790.10	695786.11	73.69	DISK
971	554878.15	696698.61	129.11	PIN/C(s)
972	555073.02	696822.69	125.79	PIN/C(s)
973	555324.98	697186.40	117.15	PIN/C(s)
974	555328.29	697548.91	96.63	G.B.(f)
975	555468.38	697809.50	92.45	DISK
976	555640.49	697867.72	72.09	G.B.(s)
977	555411.42	697997.77	85.47	PIN/C(s)
978	555238.37	697940.64	70.49	G.B.(s)
979	555115.28	698015.18	87.78	PIN/C(s)
980	554928.03	698008.18	80.93	PIN/C(s)
981	554828.02	697781.52	67.51	G.B.(S)
982	554608.27	697651.96	76.95	DISK
983	554337.91	697697.91	77.28	MAGNL(s)
984	554073.15	697638.96	76.58	PIN/C(s)
985	554090.37	697850.88	75.15	PIN/C(s)

SURVEY CONTROL NETWORK POINTS

POINT #	NORTHING (FEET)	EASTING (FEET)	ELEVATION (FEET)	DESC.
986	553791.19	697828.87	72.71	G.B.(F)
1141	555436.21	696190.95	93.57	I.PIN(f)
10874	553119.80	695375.82	69.28	G.B.(f)
10875	553250.96	695361.95	69.88	G.B.(f)
10941	553209.59	695443.61	67.53	G.B.(f)
52003	553504.76	694675.40	69.61	I.PIN(f)
60500	552811.04	694811.44	81.43	G.B.(F)
60504	553493.08	694795.99	68.28	G.B.(F)
60505	553431.74	694740.48	72.60	G.B.(F)
60511	552626.22	694850.12	75.34	I.PIN(F)
60516	552373.95	695412.38	64.04	I.PIN(F)
60518	551650.24	696899.13	59.14	C.B.(F)
60519	553266.67	696998.63	71.39	I.PIN(F)
60545	550535.42	698962.56	N/A	I.PIN(F)
60549	550646.41	699172.79	N/A	G.B.(F)
60551	550588.82	697583.34	N/A	G.B.(F)
60552	550611.64	697561.55	N/A	G.B.(F)
60557	551335.71	698564.07	N/A	C.B.(F)
60558	551388.23	698534.25	N/A	G.B.(F)
60615	553385.09	694695.50	75.40	I.PIN(F)
60950	550705.00	699289.45	N/A	G.B.(F)
62001	553285.48	694294.18	77.01	I.PIN(F)
65000	552990.73	694384.08	81.27	DISK
65001	554187.89	694605.57	73.26	G.B.(S)
65002	553508.43	695088.74	70.95	G.B.(S)
65003	552503.26	696521.21	65.89	G.B.(S)
65004	552366.69	696350.65	66.78	G.B.(s)
65005	553796.88	697140.89	74.08	DISK
65006	552744.10	697194.90	65.26	DISK
65007	555414.66	697522.06	102.24	G.B.(F)
65008	555217.20	697514.54	90.27	G.B.(F)
65009	555605.36	697779.98	90.97	C.B.(F)
65010	555803.93	697977.42	72.86	D.H.(F)
65011	555708.75	697858.52	73.01	D.H.(F)
65012	555702.94	697888.20	70.08	D.H.(F)
65013	555745.19	697945.39	70.36	D.H.(F)
65014	555440.08	698036.86	89.23	D.H.(F)
65015	555409.32	698071.85	82.18	G.B.(F)
65016	553829.73	698214.01	76.93	G.B.(F)
65017	553712.31	698725.05	66.57	G.B.(F)
65018	552588.82	698672.03	69.10	G.B.(F)
65019	552588.11	698792.15	69.58	G.B.(F)

LOT # CHART

LOT #	TAX MAP #	ADDRESS
LOT IC–1	4–7–9	229 NEW BOSTON STREET
LOT IC–2	9–2–1	225 NEW BOSTON STREET
LOT IC–3	9–2–3	223 NEW BOSTON STREET R
LOT IC–4	9–2–4	223 NEW BOSTON STREET
LOT IC–5	9–2–5	219 NEW BOSTON STREET
LOT IC–6	9–2–6	217 NEW BOSTON STREET
LOT IC–7	9–2–7	211 NEW BOSTON STREET
LOT IC–8	9–2–8	NEW BOSTON STREET
LOT IC–9	9–7–3	MERRIMAC STREET
LOT IC–10	9–1–5	MERRIMAC STREET
LOT IC–11	9–1–6	204 MERRIMAC STREET
LOT IC–12	9–1–7	225 MERRIMAC STREET
LOT IC–13	9–1–8	216 NEW BOSTON STREET
LOT IC–14	9–7–4	210 NEW BOSTON STREET
LOT IC–15	31–2–2	N/A
LOT IC–16	15–1–11	COMMERCE WAY
LOT IC–17	10–1–8	41 ATLANTIC AVENUE
LOT IC–18	10–1–5	20 ATLANTIC AVENUE
LOT IC–19	10–1–4	10 ATLANTIC AVENUE
LOT IC–20	10–1–3	120 COMMERCE WAY
LOT IC–21	10–1–10	130 COMMERCE WAY
LOT IC–22	10–1–11	COMMERCE WAY
LOT IC–23	10–1–9	ATLANTIC AVENUE
LOT IC–24	10–1–12	COMM. WAY & ATLANTIC AVE
LOT IC–25	10–1–17	COMMERCE WAY LOT 5
LOT IC–26	5–1–1	N/A
LOT IC–27	5–1–3	N/A
LOT IC–28	5–1–1	315 NEW BOSTON STREET
LOT IC–29	4–7–1	NEW BOSTON STREET R
LOT IC–30	10–1–6	30 ATLANTIC AVENUE
LOT IC–31	10–1–7	100 ATLANTIC AVENUE
LOT IC–32	9–2–2	NEW BOSTON STREET
LOT IC–33	5–1–9	236 PRESIDENTIAL WAY
LOT IC–34	5–1–8	225 PRESIDENTIAL WAY
LOT IC–35	5–4–3	PRESIDENTIAL WAY
LOT IC–36	5–4–2	200 PRESIDENTIAL WAY
LOT IC–37	5–4–6	PRESIDENTIAL WAY
LOT IC–38	5–4–4	300 PRESIDENTIAL WAY
LOT IC–39	5–4–5	400 PRESIDENTIAL WAY
LOT IC–40	10–1–16	101 COMMERCE WAY
LOT IC–41	10–1–2	112 COMMERCE WAY
LOT IC–42	10–1–19	103 COMMERCE WAY
LOT IC–43	10–1–20	99 COMMERCE WAY
LOT IC–44	10–1–18	COMMERCE WAY LOT 2
LOT IC–45	5–1–1	COMMERCE WAY LOT 4



LEGEND:

- BOUNDARY LINE
- SURVEY CONTROL LINE
- RIGHT–OF–WAY
- IPLEX SITE LIMIT
- LAND CLASS LINE
- 5–1–1 TAX MAP PARCEL NO.
- ×999 SURVEY CONTROL POINT NO.
- DISK SET
- I.PIN/C SET/FOUND TRAV
- D.H. SET/FOUND TRAV
- P.K. SET/FOUND TRAV
- I.PIN SET/FOUND TRAV
- G.B. SET/FOUND TRAV
- LIMIT OF WETLANDS 1C WORK AREA
- LIMIT OF BOSTON EDISON COMPANY PARCELS WITHIN IPLEX SITE

CLASS A LAND
MAY CONTAIN CONTAMINATED GROUNDWATER

CLASS B LAND
MAY CONTAIN CONTAMINATED GROUNDWATER AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B

CLASS C LAND
MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.

CLASS D LAND
MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINANTED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

RESTRICTED AREAS BY CLASSES OF LAND

CLASS OF LAND	DESCRIPTION
A	MAY CONTAIN CONTAMINATED GROUNDWATER
B	MAY CONTAIN CONTAMINATED GROUNDWATER, AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B.
C	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.
D	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

NOTES:

1. THE OWNER OF RECORD FOR LOT 5–1–1 IS (NOW OR FORMERLY) RESOURCES FOR RESPONSIBLE SITE MANAGEMENT, TRUSTEE OF THE INDUSTRI–PLEX SITE INTERIM CUSTODIAL TRUST – P.O. BOX 487 CHESTNUT HILL , MASSACHUSETTS 02467. DEED REFERENCE TO PARCEL 5–1–1 IS BOOK 19866 PAGE 258 DATED MAY 16, 1989 (RECORDED LAND) AND CERTIFICATE #188268 BOOK 1071 PAGE 118 DATED JULY 18, 1990 (REGISTERED LAND).

2. ELEVATION RECORDS TABULATED ON THESE DRAWINGS WERE COMPILED FROM FIELD OBSERVATIONS COLLECTED BY ELECTRONIC TOTAL STATION AND DATA COLLECTION TECHNIQUES. ELEVATIONS ARE SHOWN TO ONE HUNDREDTH OF A FOOT FOR SIMPLICITY OF TABULATION AND TO REDUCE COMPOUNDING ROUNDING ERRORS. IT IS THE INTENTION OF THE SURVEY TO REFLECT ELEVATIONS ONLY TO THE PRECISION REQUIRED BY THE PROJECT SPECIFICATIONS. ADDITIONAL PRECISION IS NOT IMPLIED BY THE TABULATION. COVER DEPTHS ARE GIVEN IN DECIMAL INCHES AND CALCULATED BY MULTIPLYING THE ELEVATION DIFFERENCES GIVEN IN DECIMAL FEET BY 12.

3. THE INFORMATION CONTAINED HEREIN IS THE RESULT OF AN ON–SITE FIELD SURVEY PERFORMED BY MERIDIAN LAND SERVICES, INC. DURING THE PERIOD OF SEPTEMBER, 1993 THROUGH JANUARY, 2000.

4. IN GENERAL, PLAN GRAPHICS SUCH AS BUILDINGS, WALKWAYS, CONCRETE PADS, EDGES OF PAVEMENT, CURBING, DRAINAGE FEATURES, ETC. WERE LOCATED FROM A FIELD SURVEY BY THIS OFFICE. ADDITIONAL GRAPHIC REPRESENTATIONS, NOT FIELD LOCATED, SUCH AS NON–GERMANE EDGES OF PAVEMENT, FENCE LINES, WATER COURSES AND ABUTTING DETAIL WERE TAKEN FROM REFERENCE PLANS 1 AND 2. THE LATTER MENTIONED DETAIL WILL BE REFERENCED ON THE PLAN WITHIN THE APPROPRIATE AREAS.

5. THE CONSTRUCTION SURVEY CONTROL NETWORK USED BY MERIDIAN LAND SERVICES, INC. WAS DERIVED ENTIRELY FROM THE EXISTING SITE CONTROL POINTS PROVIDED BY GOLDER ASSOCIATES AND VHB, INC., AS SHOWN ON REFERENCE PLAN 1, SHEET C–2 AND REFERENCE PLAN 2, SHEETS 11–1A THRU 11–1D.

6. THE COORDINATES AND ELEVATIONS OF THE EXISTING SITE CONTROL POINTS ARE BASED ON MASSACHUSETTS GRID COORDINATE SYSTEM/NAD–27 (NORTH AMERICAN DATUM OF 1927) AND NGVD–29 (THE NATIONAL GEODETIC VERTICAL DATUM OF 1929), AS STATED IN THE REFERENCE PLAN 2 NOTE 3 & SUBSEQUENTLY VERIFIED BY THIS OFFICE VIA GPS (GLOBAL POSITIONING) IN 2001.

7. A BOUNDARY "TIE IN" SURVEY WAS PERFORMED BY MERIDIAN LAND SERVICES, INC. PROPERTY LINES SHOWN HEREON WERE COMPILED AND MATHEMATICALLY COMPUTED FROM LAND COURT CASE NUMBER 7312. THESE COMPUTED PLANS WERE "BEST FIT" TO THE PROJECT COORDINATE SYSTEM USING NUMEROUS FIELD LOCATED MONUMENTS. SEE REFERENCE PLAN #3 FOR BOUNDARY LINES PERTAINING TO THIS PARCEL.

8. LAND CLASSIFICATION LINES SHOWN HEREON WERE TAKEN FROM REFERENCE PLAN 2.

9. ADDITIONAL SITE–WIDE INFORMATION CAN BE FOUND IN THE MASTER COVER CERTIFICATION REPORT, INCLUDING, MASTER RECORD DRAWINGS.

N
MA–GRID

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CERTIFICATION:

THE UNDERSIGNED, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE COMMONWEALTH OF MASSACHUSETTS, HEREBY CERTIFIES THAT THE INFORMATION ON THESE RECORD PLANS CONTAINED HEREIN IS THE RESULT OF SURVEY WORK PERFORMED IN CONFORMANCE WITH THE CODE OF MASSACHUSETTS REGULATIONS 250, SECTION 6.03.

PROFESSIONAL LAND SURVEYOR DATE

GRAPHIC SCALE
200' 100' 0 200' 400' 600'

REV.	DATE	DESCRIPTION		DR	CK
I	9/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS	JF	MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

PREPARED FOR:
ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

PREPARED BY:
MERIDIAN
Land Services, Inc.
ENGINEERS · LAND SURVEYORS · SCIENTISTS · LAND PLANNERS

DESIGNED BY:
Golder Associates
Manchester, New Hampshire
400 Commercial Street
Manchester, N.H. USA 03101
603–668–0880 · FAX 603–668–1199

PROJECT RECORD (TAX MAP PARCEL 5-1-1)

WETLANDS 1C - NORTH & SOUTH PONDS ENHANCED & UNDEVELOPED AREAS

INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS

SCALE: 1" = 200'
AUGUST 8, 2000

DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 290027111.dwg
DO NOT SCALE DRAWING

C-34
SHEET NO.
PROJECT: 2900.00
SHEET 1 OF 6

Sep 29, 2008 – 8:13am MDP Land Desktop 2004 – LDT4
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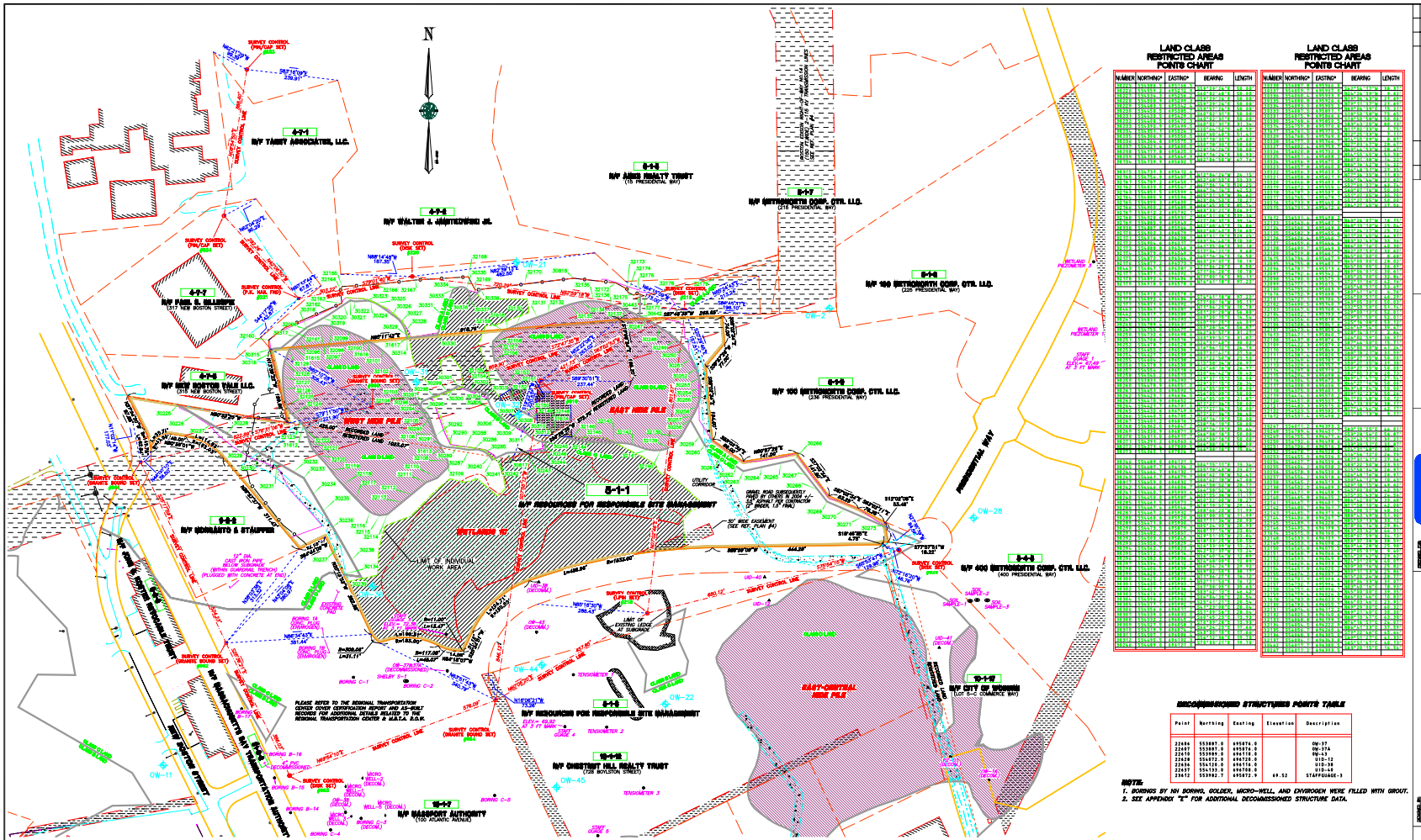
N
LAND CLASS RESTRICTED AREAS POINTS CHART
LAND CLASS RESTRICTED AREAS POINTS CHART
RECOMMENDED STRUCTURES POINTS TABLE
NOTE:
1. BORINGS BY HH BORING, BOLDER, MICRO-WELL, AND ENVIROTECH WERE FILLED WITH GROUT.
2. SEE APPENDIX "E" FOR ADDITIONAL DECOMMISSIONED STRUCTURE DATA.
SURVEY CONTROL BENCHMARK POINTS
SURVEY CONTROL BENCHMARK POINTS
SURVEY CONTROL BENCHMARK POINTS
SURVEY CONTROL BENCHMARK POINTS
RESTRICTED AREAS BY CLASSES OF LAND
LIMIT OF WETLANDS 1C WORK AREA
GRAPHIC SCALE
Legend
PROJECT RECORD LOT 5-1-1 (WETLANDS 1C1)
BOUNDARY LINES, LAND CLASSIFICATIONS, AND EASEMENTS
INDUSTR-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS
SCALE: 1" = 100'
AUGUST 6, 2000
DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 29002T1C.dwg
C-35
SHEET NO.
PROJECT: 2900.00
SHEET 2 OF 6
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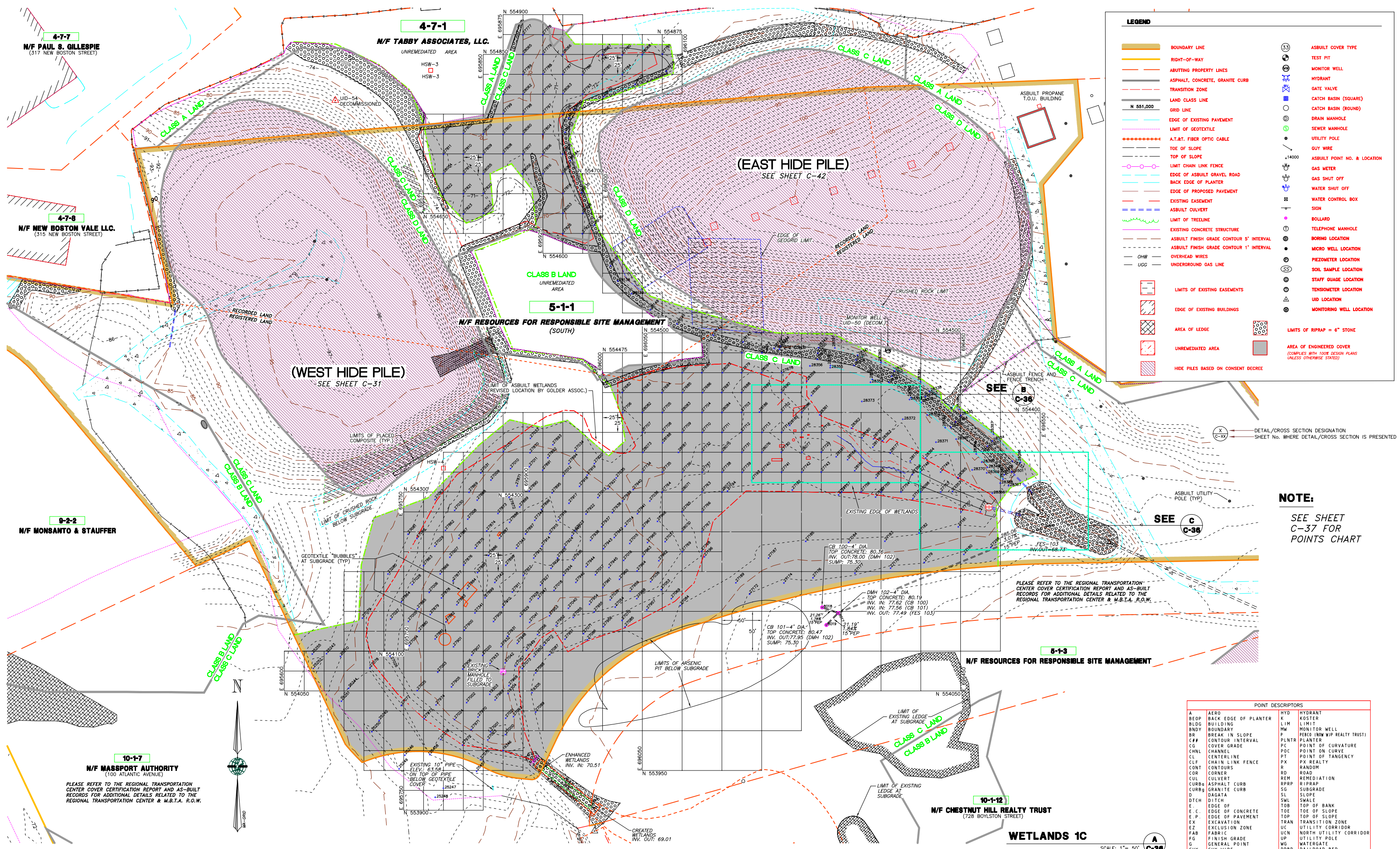
ROUX ASSOCIATES, INC.
Environmental Consulting & Management
MERIDIAN Land Services, Inc.
PROFESSIONAL LAND SURVEYOR
PROFESSIONAL ENGINEER
Goldsmith, Associates
400 Commercial Street
Manchester, New Hampshire 03101
603-668-3990 FAX 603-668-1199



WETLANDS 1C

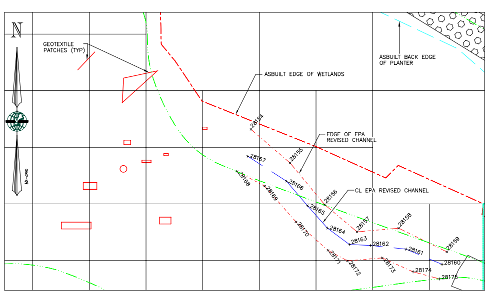
SCALE: 1"= 50' (A / C-36)

LEGEND

	BOUNDARY LINE		ASBUILT COVER TYPE
	RIGHT-OF-WAY		TEST PIT
	ABUTTING PROPERTY LINES		MONITOR WELL
	ASPHALT, CONCRETE, GRANITE CURB		HYDRANT
	TRANSITION ZONE		GATE VALVE
	LAND CLASS LINE		CATCH BASIN (SQUARE)
N 551,000	GRID LINE		CATCH BASIN (ROUND)
	EDGE OF EXISTING PAVEMENT		DRAIN MANHOLE
	LIMIT OF GEOTEXTILE		SEWER MANHOLE
	A.T.&T. FIBER OPTIC CABLE		UTILITY POLE
	TOE OF SLOPE		GUY WIRE
	TOP OF SLOPE	+14000	ASBUILT POINT NO. & LOCATION
	LIMIT CHAIN LINK FENCE		GAS METER
	EDGE OF ASBUILT GRAVEL ROAD		GAS SHUT OFF
	BACK EDGE OF PLANTER		WATER SHUT OFF
	EDGE OF PROPOSED PAVEMENT		WATER CONTROL BOX
	EXISTING EASEMENT		SIGN
	ASBUILT CULVERT		BOLLARD
	LIMIT OF TREELINE		TELEPHONE MANHOLE
	EXISTING CONCRETE STRUCTURE		BORING LOCATION
	ASBUILT FINISH GRADE CONTOUR 5' INTERVAL		MICRO WELL LOCATION
	ASBUILT FINISH GRADE CONTOUR 1' INTERVAL		PIEZOMETER LOCATION
OHW	OVERHEAD WIRES	SS	SOIL SAMPLE LOCATION
UGG	UNDERGROUND GAS LINE		STAFF GUAGE LOCATION
			TENSIOMETER LOCATION
	LIMITS OF EXISTING EASEMENTS		UID LOCATION
	EDGE OF EXISTING BUILDINGS		MONITORING WELL LOCATION
	AREA OF LEDGE		LIMITS OF RIPRAP = 6" STONE
	UNREMEDIATED AREA		AREA OF ENGINEERED COVER (COMPLIES WITH 100% DESIGN PLANS UNLESS OTHERWISE STATED)
	HIDE PILES BASED ON CONSENT DECREE		

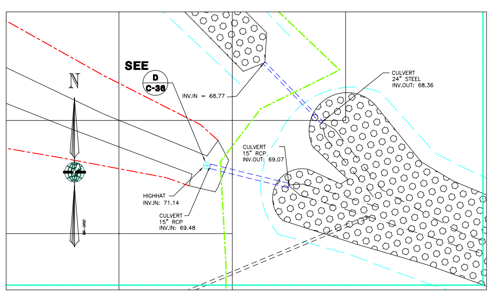
NOTE:

SEE SHEET C-37 FOR POINTS CHART



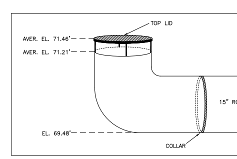
E.P.A. REVISED CHANNEL

SCALE: 1"= 20' (B / C-36)



WET 1C HIGHHAT & OUTLETS

SCALE: 1"= 20' (C / C-36)



HIGH HAT DETAIL

NOT TO SCALE (D / C-36)

RESTRICTED AREAS BY CLASSES OF LAND

CLASS OF LAND	DESCRIPTION
A	MAY CONTAIN CONTAMINATED GROUNDWATER
B	MAY CONTAIN CONTAMINATED GROUNDWATER, AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B.
C	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.
D	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

POINT DESCRIPTORS

A	AERO	HYD	HYDRANT
BEOP	BACK EDGE OF PLANTER	K	KOSTER
BLDG	BUILDING	LIM	LIMIT
BNDY	BOUNDARY	MW	MONITOR WELL
BR	BREAK IN SLOPE	P	PEBCO (NOW WJP REALTY TRUST)
C##	CONTOUR INTERVAL	PLNTR	PLANTER
CG	COVER GRADE	PC	POINT OF CURVATURE
CHNL	CHANNEL	POC	POINT ON CURVE
CL	CENTERLINE	PT	POINT OF TANGENCY
CLF	CHAIN LINK FENCE	PX	PX REALTY
CONT	CONTOURS	R	RANDOM
COR	CORNER	RD	ROAD
CUL	CULVERT	REM	REMEDIATION
CURBa	ASPHALT CURB	RPRP	RIPRAP
CURBg	GRANITE CURB	SG	SUBGRADE
D	DAGATA	SL	SLOPE
DTCH	DITCH	SWL	SWALE
E.	EDGE OF	TOB	TOP OF BANK
E.C.	EDGE OF CONCRETE	TOE	TOE OF SLOPE
E.P.	EDGE OF PAVEMENT	TOP	TOP OF SLOPE
EX	EXCAVATION	TRAN	TRANSITION ZONE
EZ	EXCLUSION ZONE	UC	UTILITY CORRIDOR
FAB	FABRIC	UCN	NORTH UTILITY CORRIDOR
FG	FINISH GRADE	UP	UTILITY POLE
G	GENERAL POINT	WG	WATERGATE
GUY	GUY WIRE	RRBD	RAILROAD BED

TABLE REMARKS

A	IN RIP RAP- SUBGRADE AND FINISH GRADE ONLY
B	IN GRAVEL ROAD- SUBGRADE AND FINISH GRADE ONLY
C	CULVERT- ONLY SUBGRADE AND FINISH GRADE
D	REMEDIATION IN PROGRESS
E	UNABLE TO COLLECT
F	ON CLAY BERM- NO SUBGRADE
G	BOX CULVERT SUBGRADE ONLY
H	TOP OF BANK OF UTILITY CORRIDOR- SUBGRADE ONLY
I	CREATED WETLANDS STREAM- SEE COVER GRADE
J	FINISH GRADE ON CONCRETE WEIR
K	NO "TEWKSBURY" LOAM APPLIED
L	NOT COLLECTED
M	OUTSIDE LIMIT OF CLAY GRADE
N	UNDER WATER
P	AT TRANSITION- NO COVER GRADE
Q	IN GRAVEL ROAD- SEE ADJACENT SUBGRADE
R	IN GRAVEL ROAD- SEE ADJACENT FINISH GRADE
S	IN GRAVEL ROAD AT UTILITY CORRIDOR- NO SUBGRADE

GRAPHIC SCALE

50' 25' 0 50' 100' 150'

REV.	DATE	DESCRIPTION		DR	CK
I	7/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS	JF	MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

PREPARED FOR:

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

PREPARED BY:

MERIDIAN Land Services, Inc.
ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

DESIGNED BY:

Golder Associates
Manchester, New Hampshire
400 Commercial Street
Manchester, N.H. USA 03101
603-668-0880 • FAX 603-668-1199

PROJECT RECORD (LOT 5-1-1 (WETLANDS 1C))

RECORD POINTS, TOPOGRAPHY, DRAINAGE & LIMITS OF ENGINEERED COVER

INDUSTRI-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS

SCALE: 1" = 50'

AUGUST 8, 2000

DESIGNED BY: MDP		C-36	
DRAFTED BY: MDP		SHEET NO.	
CHECKED BY: JGK			
FILE: 290027113.dwg		PROJECT:	2900.00
DO NOT SCALE DRAWING		SHEET	3 OF 6

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MERIDIAN LAND SERVICES POINTS TABLE

Point Number	Northing	Easting	Subgrade (Geotextile) Elev. Feet	Cover Grade Elev. Feet	Cover Grade Depth Inches	Finish Grade Elev. Feet	Finish Grade Depth Inches	Total Depth Inches	Desc.
19303	554045.7	695858.1	67.62	68.45	9.90	69.05	7.20	17.10	C69
19304	554046.7	695881.3	68.61	69.39	9.35	69.93	6.44	15.79	C70
19305	554047.8	695910.9	72.54	73.65	13.34	74.17	6.30	19.64	C74
19346	553975.0	695875.1	69.33	70.21	10.51	70.74	6.41	16.92	GRID
21501	554325.4	696513.8	67.54	C		68.77		14.76	INV
25210	554093.5	695670.1	74.67	75.66	11.88	76.09	5.16	17.04	C76
25243	554096.8	695653.2	74.79	B		76.13		16.08	R
25244	554053.3	695681.0	72.53	B		73.93		16.80	R
25245	554013.0	695719.3	72.19	B		73.53		16.08	R
25246	553969.2	695751.7	71.82	B		73.16		16.08	R
25247	553927.7	695799.6	71.15	B		72.53		16.56	R
25248	553916.3	695789.5	71.25	B		72.64		16.68	R
25249	553952.1	695744.4	71.69	B		73.01		15.84	R
25250	553998.8	695710.1	71.44	B		72.80		16.32	R
25251	554037.1	695671.7	72.15	B		73.58		17.16	R
25252	554078.3	695636.6	74.12	B		75.47		16.20	R
25255	554096.3	695635.3	74.92	B		76.27		16.20	R
25457	553948.9	695841.4	72.66	73.74	12.89	74.17	5.24	18.13	C74
25458	553970.0	695782.9	72.54	73.61	12.84	74.00	4.67	17.51	C74
27000	553995.1	695877.7	67.51	68.27	9.13	68.83	6.82	15.95	C69
27001	553998.7	695859.4	67.61	68.38	9.23	68.93	6.65	15.88	C69
27002	554035.3	695829.0	67.66	68.46	9.65	69.05	7.04	16.69	C69
27003	554073.6	695792.6	68.44	69.17	8.76	69.52	4.16	12.92	C69
27004	554106.8	695757.1	67.41	69.64	26.76	70.32	8.16	34.92	R
27005	554137.0	695755.8	67.36	70.08	32.64	70.80	8.64	41.28	R
27006	554174.0	695782.1	67.21	68.73	18.24	69.52	9.48	27.72	R
27007	554218.0	695808.0	67.03	68.79	21.12	69.55	9.12	30.24	R
27008	554265.6	695830.6	68.47	69.23	9.12	69.91	8.16	17.28	R
27009	554315.2	695859.5	68.03	68.80	9.24	69.49	8.28	17.52	R
27010	554329.5	695884.3	67.74	68.61	10.44	69.33	8.64	19.08	R
27011	554331.9	695908.1	68.06	68.83	9.24	69.55	8.64	17.88	R
27012	554320.3	695950.2	68.07	68.79	8.64	69.65	10.32	18.96	R
27013	554292.9	695993.9	68.10	68.87	9.24	69.58	8.52	17.76	R
27014	554256.9	696028.2	68.34	68.97	7.56	69.75	9.36	16.92	R
27015	554235.4	696034.1	67.95	68.71	9.12	69.42	8.52	17.64	R
27016	554214.2	696026.3	67.26	68.11	10.20	69.03	11.04	21.24	R
27017	554196.0	695991.1	67.29	68.53	14.88	69.22	8.28	23.16	R
27018	554176.5	695938.9	66.82	68.98	25.92	69.75	9.24	35.16	R
27020	554094.6	695849.2	67.60	68.50	10.84	69.08	6.96	17.80	C69
27021	554015.7	695878.3	67.61	68.52	10.94	69.11	7.01	17.95	C69
27023	553988.3	695855.4	68.46	69.18	8.63	69.69	6.13	14.76	C70
27024	554014.0	695814.1	68.65	69.42	9.19	69.96	6.53	15.72	C70
27025	554050.3	695767.1	68.65	69.49	10.02	70.11	7.48	17.50	C70
27026	554093.6	695732.8	68.67	70.61	23.28	71.42	9.72	33.00	R
27027	554139.7	695733.4	68.65	70.86	26.52	71.57	8.52	35.04	R
27028	554183.4	695760.7	68.56	70.00	17.28	70.68	8.16	25.44	R
27029	554231.9	695789.2	69.35	69.98	7.56	70.67	8.28	15.84	R
27030	554277.1	695814.1	68.64	69.45	9.72	70.15	8.40	18.12	R
27031	554323.7	695847.0	68.65	69.55	10.80	70.27	8.64	19.44	R
27032	554351.2	695875.2	68.66	69.38	8.64	70.09	8.52	17.16	R
27033	554367.5	695909.1	68.67	69.52	10.20	70.23	8.52	18.72	R
27034	554351.7	695965.4	68.65	69.47	9.84	70.29	9.84	19.68	R
27035	554317.7	696017.2	68.67	69.53	10.32	70.31	9.36	19.68	R
27036	554288.7	696059.0	68.64	69.57	11.16	70.50	11.16	22.32	R
27037	554237.5	696078.9	68.91	69.58	8.04	70.37	9.48	17.52	R
27038	554187.3	696060.5	68.60	69.35	9.00	70.10	9.00	18.00	R
27039	554164.2	696009.7	68.65	69.55	10.80	70.23	8.16	18.96	GRID
27040	554153.9	695957.0	68.66	69.59	11.16	70.34	9.00	20.16	R
27041	554136.1	695908.6	68.44	69.25	9.73	69.78	6.35	16.08	C70
27042	554085.3	695877.5	68.61	69.37	9.18	69.99	7.42	16.60	C70
27043	554017.7	695888.0	68.61	69.38	9.23	69.90	6.23	15.46	C70
27053	554177.4	696073.7	69.62	70.77	13.80	71.44	8.04	21.84	R
27054	554155.6	696015.7	69.46	70.37	10.92	71.11	8.88	19.80	R
27055	554142.4	695963.2	69.38	70.46	12.96	71.16	8.40	21.36	R
27056	554121.0	695917.9	69.63	70.30	8.06	70.78	5.75	13.81	C71
27057	554081.1	695890.1	69.78	70.72	11.38	71.12	4.75	16.13	C71
27066	554241.6	695766.7	70.65	71.68	12.36	72.34	7.92	20.28	R
27067	554290.4	695789.5	70.61	72.21	19.20	72.89	8.16	27.36	R
27069	554165.9	696086.5	70.76	72.36	19.20	73.05	8.28	27.48	R
27070	554138.5	696024.5	70.93	72.07	13.68	72.76	8.28	21.96	GRID
27071	554122.2	695976.0	70.79	71.98	14.28	72.71	8.76	23.04	R
27072	554107.6	695926.5	70.64	71.86	14.60	72.25	4.66	19.26	C72
27073	554078.3	695898.8	70.88	72.05	14.06	72.39	4.08	18.14	C72
27075	553963.5	695847.0	72.59	73.70	13.28	74.08	4.58	17.87	C74
27076	553988.8	695796.1	72.51	73.65	13.73	74.09	5.17	18.90	C74
27077	554031.6	695747.0	72.58	73.76	14.10	74.13	4.46	18.56	C74
27078	554078.6	695707.8	72.58	73.64	12.72	74.03	4.68	17.40	C74
27079	554141.6	695697.9	72.66	73.82	13.92	74.39	6.84	20.76	C74
27080	554197.1	695729.7	72.67	73.80	13.56	74.24	5.28	18.84	C74
27081	554246.9	695755.7	72.67	73.74	12.84	74.15	4.92	17.76	C74
27084	554157.2	696097.8	72.65	73.69	12.48	74.03	4.08	16.56	R
27085	554130.4	696028.4	72.49	73.53	12.48	73.91	4.56	17.04	R
27086	554114.4	695980.9	72.63	73.72	13.08	74.08	4.32	17.40	R
27087	554095.6	695933.9	72.61	73.67	12.73	74.06	4.68	17.41	C74
27088	554072.6	695915.9	72.55	73.67	13.33	74.17	6.07	19.40	C74
27089	554023.3	695916.0	72.59	73.63	12.52	74.13	5.98	18.49	C74
27137	554291.7	696390.4	70.56	71.56	12.00	71.93	4.44	16.44	R
27172	554171.6	696185.0	74.63	75.70	12.84	76.05	4.20	17.04	R
27174	554185.7	696227.9	74.81	75.84	12.36	76.23	4.68	17.04	R
27176	554192.0	696264.8	74.32	75.34	12.24	75.83	5.88	18.12	R
27177	554197.9	696317.2	74.42	75.47	12.60	75.86	4.68	17.28	R
27178	554204.2	696362.0	74.66	75.74	12.96	76.18	5.28	18.24	R
27179	554211.3	696404.6	74.26	75.40	13.68	75.95	6.60	20.28	R
27180	554221.5	696454.1	74.61	75.62	12.12	76.22	7.20	19.32	R
27181	554256.2	696447.2	72.63	73.66	12.36	74.20	6.48	18.84	R
27182	554248.4	696397.9	72.46	73.51	12.60	73.93	5.04	17.64	R
27183	554238.1	696354.9	72.66	73.82	13.92	74.19	4.44	18.36	R
27184	554236.6	696309.2	72.66	73.69	12.36	74.17	5.76	18.12	R
27185	554238.2	696254.9	72.01	73.71	20.40	74.05	4.08	24.48	R
27187	554217.2	696208.2	72.44	73.50	12.72	74.45	11.40	24.12	R
27189	554185.9	696167.6	72.72	73.98	15.12	74.46	5.76	20.88	R
27190	554293.6	696343.3	70.43	71.71	15.36	72.23	6.24	21.60	R
27191	554296.5	696296.6	70.51	71.53	12.24	71.94	4.92	17.16	R
27192	554302.5	696238.5	69.80	71.82	24.24	72.29	5.64	29.88	R
27193	554314.6	696187.6	70.17	71.44	15.24	71.84	4.80	20.04	R
27194	554301.3	696156.7	70.34	71.60	15.12	72.14	6.48	21.60	R
27196	554218.5	696128.0	70.59	71.39	9.60	72.16	9.24	18.84	R
27298	554230.2	696488.1	74.18	75.46	15.36	76.04	6.97	22.33	R
27341	554147.9	695839.6	66.68	68.28	19.20	69.08	9.60	28.80	GRID
27342	554186.7	695864.5	66.65	68.36	20.52	69.04	8.16	28.68	GRID
27343	554229.4	695891.9	67.18	68.27	13.08	68.96	8.28	21.36	GRID
27344	554264.6	695914.6	67.14	68.05	10.92	68.78	8.76	19.68	GRID
27345	554245.3	695961.7	67.19	68.09	10.80	68.79	8.40	19.20	GRID
27347	554172.5	696489.9	77.94	79.06	13.42	79.52	5.60	19.02	R
27349	554478.1	696222.2	70.11	A		71.91		21.60	CLCHNL
27350	554475.1	696270.8	69.63	A		70.98		16.20	CLCHNL
27351	554465.9	696318.7	69.29	A		70.75		17.52	CLCHNL
27352	554445.7	696363.5	68.96	A		70.35		16.68	CLCHNL
27353	554420.2	696406.8	68.64	A		70.21		18.84	CLCHNL
27354	554388.4	696444.6	68.25	A		69.72		17.64	CLCHNL
27355	554357.6	696483.6	67.95	A		69.43		17.76	CLCHNL
27356	554321.9	696389.4	69.28	A		70.25		11.63	CLCHNL
27357	554300.8	696439.9	68.92	A		70.64		20.63	CLCHNL
27671	554475.0	696150.0	E	69.84		70.38	6.48		GRID
27672	554475.0	696175.0	E	70.32		70.85	6.36		GRID
27673	554475.0	696200.0	E	70.12		70.69	6.84		GRID
27678	554450.0	696224.9	E	70.17		70.94	9.24		GRID
27679	554450.0	696174.7	E	70.18		70.94	9.12		GRID
27680	554450.0	696124.7	E	69.67		70.31	7.68		GRID
27681	554450.0	696075.0	E	69.42		69.53	1.32		GRID
27682	554425.0	696024.9	E	70.25		70.89	7.68		GRID
27683	554425.0	696049.7	E	70.04		70.59	6.60		GRID
27684	554425.0	696074.5	E	69.98		70.56	6.96		GRID
27685	554425.0	696100.3	E	69.82		70.36	6.48		GRID
27686	554425.0	696125.4	E	69.73		70.23	6.00		GRID
27687	554425.0	696149.7	E	70.28		70.84	6.72		GRID
27688	554425.0	696174.5	E	70.56		71.14	6.96		GRID
27689	554425.0	696199.8	E	70.61		71.15	6.48		GRID
27690	554425.0	696224.8	E	70.16		70.87	8.52		GRID
27702	554400.0	696224.6	E	70.65		71.21	6.72		GRID
27703	554400.1	696174.5	E	70.43		70.95	6.24		GRID
27704	554400.0	696125.1	E	69.60		70.35	9.00		GRID
27705	554400.0	696075.0	E	70.06		70.61	6.60		GRID
27706	554399.9	696025.3	E	70.52		71.05	6.36		GRID
27707	554375.0	696049.9	E	70.33		71.06	8.76		GRID
27708	554374.9	696075.4	E	69.92		70.65	8.76		GRID
27709	554375.0	696100.0	E	69.86		70.39	6.36		GRID
27710	554375.0	696125.2	E	70.04		70.69	7.80		GRID
27711	554375.0	696150.2	E	69.95		70.66	8.52		GRID
27712	554375.0	696174.7	E	70.45		71.01	6.72		GRID
27713	554374.9	696200.4	E	70.55		71.15	7.20		GRID
27714	554375.0	696224.9	E	70.08		70.74	7.92		GRID
27715	554375.0	696250.0	E	70.66		71.20	6.48		GRID
27716	554374.9	696275.5	E	70.56		71.23	8.04		GRID
27729	554350.0	696275.1	E	69.80		70.52	8.64		GRID
27730	554350.1	696224.7	E	70.67		71.30	7.56		GRID
27731	554350.1	696174.8	E	70.66		71.35	8.28		GRID
27732	554350.1	696124.8	E	70.74		71.26	6.24		GRID
27734	554325.0	696049.9	E	69.18		69.50	3.84		GRID
27735	554324.9	696075.2	E	69.22		69.88	7.92		GRID
27736	554324.9	696100.2	E	70.26		70.81	6.60		GRID
27737	554325.0	696125.0	E	70.29		70.89	7.20		GRID
27738	554325.0	696150.1	E	70.62		71.26	7.68		GRID
27739	554324.9	696175.3	E	70.76		71.36	7.20		GRID

MERIDIAN LAND SERVICES POINTS TABLE

Point Number	Northing	Easting	Subgrade (Geotextile) Elev. Feet	Cover Grade Elev. Feet	Cover Grade Depth Inches	Finish Grade Elev. Feet	Finish Grade Depth Inches	Total Depth Inches	Desc.
27740	554325.0	696200.0	E	70.72		71.37	7.80		GRID
27741	554325.0	696224.9	E	70.88		71.57	8.28		GRID
27742	554324.9	696250.2	E	71.01		71.67	7.92		GRID
27743	554325.0	696274.9	E	71.09		71.63	6.48		GRID
27748	554325.0	696399.9	E	70.75		71.31	6.72		GRID
27749	554325.0	696425.1	E	72.28		72.83	6.60		GRID
27753	554300.0	696425.0	E	71.09		71.68	7.13		GRID
27754	554300.0	696375.1	E	71.04		71.55	6.12		GRID
27755	554300.0	696350.1	E	71.30		71.95	7.80		GRID
27756	554300.0	696325.1	E	71.11		71.63	6.24		GRID
27757	554300.0	696300.1	E	70.81		71.33	6.24		GRID
27763	554300.0	696124.9	E	71.43		71.96	6.36		GRID
27764	554299.9	696075.1	E	70.35		71.03	8.16		GRID
27765	554275.0	696100.1	E	71.25		72.03	9.36		GRID
27766	554274.9	696125.1	E	71.53		72.46	11.16		GRID
27767	554250.0	696125.0	E	71.36		72.28	11.04		GRID
27768	554225.2	696124.8	E	71.27		72.15	10.56		GRID
27769	554224.9	696100.1	E	70.31		71.06	9.00		GRID
27770	554275.0	696450.1	E	72.09		72.72	7.51		GRID
27771	554275.0	696474.8	E	71.94		72.50	6.68		GRID
27777	554875.0	695900.0	E	69.68		70.25	6.84		GRID
27778	554874.4	695924.8	E	69.79		69.79	0.00		GRID
27779	554849.9	695925.0	E	69.44		70.24	9.60		GRID
27780	554849.6	696024.8	E	70.99		71.52	6.36		GRID
27781	554850.4	696075.2	E	72.44		73.00	6.72		GRID
27784	554825.1	696025.0	E	71.07		71.80	8.76		GRID
27785	554824.8	695999.9	E	71.27		71.92	7.80		GRID
27786	554824.4	695974.7	E	71.14		71.80	7.92		GRID
27787	554824.9	695949.9	E	70.73		71.31	6.96		GRID
27788	554825.3	695925.1	E	70.08		70.78	8.40		GRID
27789	554825.2	695900.0	E	69.35		69.58	2.76		GRID
27791	554799.7	695874.9	E	69.26		69.38	1.44		GRID
27792	554800.3	695925.1	E	69.82		70.31	5.88		GRID
27793	554800.2	695975.1	E	71.35		71.90	6.60		GRID
27796	554774.8	695949.9	E	71.15		71.75	7.20		GRID
27797	554775.1	695925.0	E	69.56		70.29	8.76		GRID
27798	554775.0	695900.0	E	69.84		70.43	7.08		GRID
27799	554775.2	695875.1	E	70.23		70.75	6.24		GRID
27802	554750.3	695825.0	E	69.55		70.07	6.24		GRID
27803	554750.0	695875.0	E	70.17		70.79	7.44		GRID
27804	554749.8	695924.9	E	69.47		69.98	6.12		GRID
27805	554724.9	695950.0	E	69.98		70.49	6.12		GRID
27806	554724.9	695924.9	E	69.33		70.04	8.52		GRID
27807	554724.9	695900.0	E	70.44		70.99	6.60		GRID
27808	554725.0	695875.0	E	69.87		70.43	6.72		GRID
27809	554724.8	695850.0	E	69.79		70.32	6.36		GRID
27810	554724.9	695825.0	E	70.32		70.88	6.72		GRID
27811	554724.9	695800.0	E	70.51		71.03	6.24		GRID
27814	554699.8	695825.0	E	70.75		71.28	6.36		GRID
27816	554700.2	695925.1	E	68.98		69.02	0.48		GRID
27818	554675.0	695950.0	E	69.25		69.98	8.76		GRID
27820	554675.3	695850.1	E	70.54		71.07	6.36		GRID
27821	554675.2	695825.0	E	70.52		71.08	6.72		GRID
27822	554675.1	695800.0	E	70.65		71.17	6.24		GRID
27823	554649.7	695825.0	E	69.88		70.40	6.24		GRID
27826	554624.9	695949.9	E	68.94		69.36	5.04		GRID
27827	554624.7	695974.7	E	70.25		70.83	6.96		GRID
27828	554649.9	695974.9	E	70.06		70.69	7.56		GRID
27862	554251.7	695802.4	E	69.46		70.17	8.52		GRID
27863	554207.1	695775.0	E	69.86		70.58	8.64		GRID
27864	554162.1	695747.2	E	70.25		70.95	8.40		GRID
27865	554153.1	695767.2	E	69.50		70.20	8.40		GRID
27866	554197.1	695795.9	E	68.77		69.48	8.52		GRID
27867	554241.8	695819.4	E	69.11		69.78	8.04		GRID
27868	554289.9	695842.3	E	69.02		69.74	8.64		GRID
27869	554299.8	695832.1	E	69.51		70.16	7.80		GRID
27870	554349.5	695908.7	E	68.99		69.64	7.80		GRID
27871	554308.1	695892.2	E	68.78		69.48	8.40		GRID
27872	554293.4	695882.4	E	68.77		69.47	8.40		GRID
27873	554272.9	695868.5	E	68.56		69.27	8.52		GRID
27874	554251.5	695854.3	E	68.38		69.05	8.04		GRID
27875	554229.9	695839.9	E	68.50		69.16	7.92		GRID
27876	554208.1	695825.4	E	68.48		69.15	8.04		GRID
27877	554188.5	695812.0	E	68.25		68.98	8.76		GRID
27878	554166.8	695797.5	E	68.70		69.41	8.52		GRID
27879	554145.9	695783.4	E	68.79		69.53	8.88		GRID
27880	554124.9	695769.3	E	69.07		69.75	8.16		GRID
27881	554115.6	695789.6	E	68.64		69.38	8.88		GRID
27882	554137.0	695803.2	E	69.33		70.01	8.16		GRID
27883	554158.0	695816.8	E	68.15		69.09	11.28		GRID
27884	554178.9	695830.1	E	68.70		69.47	9.24		GRID
27885	554198.8	695842.8	E	68.26		68.94	8.16		GRID
27886	554220.4	695856.7	E	68.34		69.02	8.16		GRID
27887	554242.2	695870.4	E	68.14		68.82	8.16		GRID
27888	554262.0	695883.1	E	68.23		68.92	8.28		GRID
27889	554281.4	695895.7	E	68.39		69.09	8.40		GRID
27890	554300.9	695907.9	E	68.76		69.41	7.80		GRID
27891	554327.2	695924.9	E	68.90		69.59	8.28		GRID
27892	554343.1	695931.1	E	68.87		69.58	8.52		GRID
27893	554359.3	695937.6	E	69.48		70.19	8.52		GRID
27894	554335.6	695957.6	E	68.92		69.68	9.12		GRID
27895	554298.9	695936.9	E	68.37		69.05	8.16		GRID
27896	554278.0	695923.2	E	68.14		68.81	8.04		GRID
27897	554247.0	695903.3	E	68.17		68.86	8.28		GRID
27898	554208.0	695878.4	E	68.17		69.10	11.16		GRID
27899	554167.2	695852.3	E	68.27		69.00	8.76		GRID
27900	554126.4	695826.3	E	68.48		69.25	9.24		GRID
27901	554105.6	695812.6	E	68.75		69.42	8.04		GRID
27905	554055.1	695809.9	68.05	68.78	8.76	69.23	5.38	14.14	GRID
27906	554077.5	695824.4	67.88	68.62	8.93	69.09	5.58	14.51	GRID
27907	554094.9	695835.4	67.86	68.77	10.94	69.35	6.97	17.92	GRID
27909	554137.1	695863.0	E	68.55		69.25	8.40		GRID
27910	554155.4	695874.5	E	68.19		69.04	10.20		GRID
27911	554174.2	695886.6	E	68.19		68.88	8.28		GRID
27912	554195.4	695900.2	E	68.18		68.93	9.00		GRID
27913	554216.8	695913.6	E	68.21		68.91	8.40		GRID
27914	554231.8	695923.5	E	67.96		68.70	8.88		GRID
27915	554247.6	695933.4	E	68.18		68.85	8.04		GRID
27916	554264.6	695944.4	E	68.33		69.03	8.40		GRID
27917	554285.8	695957.8	E	68.53		69.20	8.04		GRID
27918	554306.8	695971.4	E	68.88		69.65	9.24		GRID
27919	554321.1	695980.5	E	69.19		69.88	8.28		GRID
27920	554335.7	695989.7	E	69.85		70.65	9.60		GRID
27921	554304.3	696006.7	E	69.20		69.93	8.76		GRID
27922	554272.3	695979.1	E	68.70		69.38	8.16		GRID
27923	554251.4	695965.5	E	68.31		69.01	8.40		GRID
27924	554230.8	695952.2	E	67.98		68.73	9.00		GRID
27925	554217.1	695943.5	E	68.00		68.90	10.80		GRID
27926	554203.9	695935.2	E	68.36		69.04	8.16		GRID
27927	554183.1	695921.8	E	68.86		69.55	8.28		GRID
27928	554162.1	695908.5	E	68.67		69.40	8.76		GRID
27929	554143.7	695896.7	E	68.84		69.58	8.88		GRID
27931	554118.9	695880.6	68.15	69.06	11.02	69.66	7.12	18.13	GRID
27932	554105.8	695872.3	68.30	69.16	10.25	69.77	7.38	17.63	GRID
27933	554084.5	695858.8	67.78	68.70	11.04	69.27	6.89	17.93	GRID
27934	554195.6	695950.9	E	68.89		69.69	9.60		GRID
27935	554214.3	695963.6	E	68.25		69.02	9.24		GRID
27936	554239.1	695985.0	E	68.50		69.20	8.40		GRID
27937	554256.2	695998.6	E	68.57		69.27	8.40		GRID
27938	554273.9	696012.4	E	68.89		69.62	8.76		GRID
27939	554288.4	696025.4	E	69.17		69.96	9.48		GRID
27940	554303.2	696038.1	E	69.25		70.02	9.24		GRID
27941	554272.7	696043.7	E	69.45		70.15	8.40		GRID
27942	554242.8	696014.8	E	68.51		69.25	8.88		GRID
27943	554228.7	696001.3	E	68.51		69.21	8.40		GRID
27944	554206.3	695979.2	E	68.39		69.13	8.88		GRID
27945	554205.0	696008.1	E	68.40		69.11	8.52		GRID
27946	554186.7	695966.2	E	68.85		69.54	8.28		GRID
27947	554166.4	695919.0	E	68.92		69.62	8.40		GRID
27948	554109.8	695892.5	69.02	69.73	8.44	70.32	7.15	15.59	GRID
27949	554100.8	695904.2	70.12	70.99	10.43	71.39	4.80	15.23	GRID
27950	554093.2	695913.9	71.29	72.44	13.85	72.82	4.58	18.43	GRID
27951	554115.3	695952.7	E	72.12		72.90	9.36		GRID
27952	554132.4	695941.5	E	70.13		70.82	8.28		GRID
27953	554144.5	695933.3	E	69.34		70.02	8.16		GRID
27954	554158.9	695983.5	E	69.51		70.23	8.64		GRID
27955	554149.1	695989.6	E	70.24		70.94	8.40		GRID
27956	554130.7	696001.1	E	72.15		72.82	8.04		GRID
27957	554151.9	696055.6	E	72.33		73.01	8.16		GRID
27958	554166.0	696043.0	E	70.54		71.26	8.64		GRID
27959	554175.4	696034.6	E	69.66		70.34	8.16		GRID
27960	554190.2	696021.3	E	68.90		69.62	8.64		GRID
27961	554180.1	696000.3	E	68.90		69.68	9.36		GRID
27962	554213.8	696070.5	E	68.75		69.71	11.52		GRID
27963	554219.2	696050.2	E	68.66		69.59	11.16		GRID
27964	554200.7	696043.5	E	68.65		69.43	9.36		GRID
27965	554236.5	696056.4	E	69.17		69.91	8.88		GRID
27966	554263.1	696068.9	E	70.25		70.92	8.04		GRID
27967	554254.6	696050.1	E	69.55		70.24	8.28		GRID
27968	554056.6	695882.4	69.10	69.86	9.11	70.37	6.12	15.23	GRID
27969	554038.6	695864.8	67.62	68.43	9.68	69.03	7.19	16.87	GRID
27970	554017.2	695843.4	67.87	68.59	8.54	69.22	7.57	16.12	GRID
27971	554001.3	695835.0	68.62	69.30	8.18	69.87	6.82	15.00	GRID
27972	553981.8	695823.9	71.41	72.54	13.60	72.91	4.43	18.02	GRID

MERIDIAN LAND SERVICES POINTS TABLE

Point Number	Northing	Easting	Subgrade (Geotextile) Elev. Feet	Cover Grade Elev. Feet	Cover Grade Depth Inches	Finish Grade Elev. Feet	Finish Grade Depth Inches	Total Depth Inches	Desc.
27973	554015.0	695775.1	71.70	72.77	12.84	73.19	4.99	17.83	GRID
27974	554032.4	695790.2	68.76	69.62	10.33	70.11	5.90	16.24	GRID
28052	554650.4	695850.1	E	69.67		70.43	9.12		GRID
28053	554650.2	695950.2	E	69.11		69.87	9.12		GRID
28054	554700.0	695800.0	E	70.52		71.05	6.36		GRID
28055	554699.7	695850.0	E	70.11		70.88	9.24		GRID
28056	554699.9	695899.2	E	70.65		71.42	9.24		GRID
28057	554700.1	695950.0	E	69.48		70.02	6.48		GRID
28058	554750.4	695800.0	E	69.41		70.14	8.76		GRID
28059	554749.9	695850.0	E	69.35		69.86	6.12		GRID
28060	554749.9	695900.0	E	70.28		70.82	6.48		GRID
28062	554800.0	695900.0	E	69.69		69.82	1.56		GRID
28063	554800.3	695950.1	E	70.50		71.37	10.44		GRID
28065	554850.2	695900.1	E	68.96		69.27	3.72		GRID
28066	554850.1	695950.1	E	70.72		71.32	7.20		GRID
28067	554849.7	695999.8	E	71.43		72.06	7.56		GRID
28068	554850.2	696050.1	E	71.40		72.13	8.76		GRID
28070	554250.1	696099.8	E	70.73		71.56	9.96		GRID
28071	554300.1	696099.7	E	70.87		71.40	6.36		GRID
28072	554300.1	696149.8	E	71.43		72.05	7.44		GRID
28073	554350.0	696049.9	69.67	69.91	2.88	70.47	6.72	9.60	GRID
28075	554349.9	696150.3	68.87	70.43	18.72	71.16	8.76	27.48	GRID
28076	554350.0	696200.1	69.91	70.37	5.52	71.07	8.40	13.92	GRID
28077	554349.9	696250.4	E	70.21		70.96	9.00		GRID
28082	554400.0	696049.8	E	70.28		70.84	6.72		GRID
28083	554400.1	696099.3	E	69.77		70.28	6.12		GRID
28084	554400.0	696149.8	67.18	70.11	35.16	70.67	6.72	41.88	GRID
28086	554400.0	696250.2	69.60	70.22	7.44	70.91	8.28	15.72	GRID
28092	554450.0	696100.2	67.98	69.51	18.36	69.52	0.12	18.48	GRID
28093	554450.0	696150.2	68.13	70.06	23.16	70.72	7.92	31.08	GRID
28094	554450.0	696200.2	69.80	70.29	5.88	71.08	9.48	15.36	GRID
28098	554300.0	696400.1	E	70.71		71.25	6.48		GRID
28128	554829.0	696080.1	71.10	A		72.44		16.08	RIPRAP
28129	554812.1	696040.5	71.35	A		72.73		16.56	RIPRAP
28130	554796.7	696001.5	71.07	A		72.44		16.44	RIPRAP
28131	554780.4	695965.0	71.71	A		73.13		17.04	RIPRAP
28132	554770.2	695957.2	71.54	A		73.13		19.08	RIPRAP
28133	554752.1	695952.7	70.66	A		72.18		18.24	RIPRAP
28134	554716.8	695959.4	70.36	A		71.73		16.44	RIPRAP
28135	554676.3	695973.6	70.05	A		71.64		19.08	RIPRAP
28136	554635.1	695989.2	70.84	A		72.31		17.64	RIPRAP
28137	554584.1	696009.7	70.82	A		72.46		19.68	RIPRAP
28138	554565.2	696019.0	71.11	A		73.02		22.92	RIPRAP
28139	554549.2	696036.2	71.16	A		72.99		21.96	RIPRAP
28140	554529.2	696060.4	70.65	A		72.38		20.76	RIPRAP
28141	554511.2	696093.2	70.62	A		72.20		18.96	RIPRAP
28142	554497.0	696138.9	70.74	A		72.20		17.52	RIPRAP
28143	554488.7	696177.1	70.53	A		72.43		22.80	RIPRAP
28144	554481.2	696215.4	70.44	A		72.37		23.16	RIPRAP
28155	554368.1	696313.3	E	70.50		71.09	7.08		TOB
28156	554349.6	696329.1	E	70.86		71.41	6.60		TOB
28157	554337.6	696343.1	E	70.82		71.36	6.48		TOB
28158	554339.3	696361.2	E	70.97		71.48	6.12		TOB
28159	554328.7	696383.0	E	70.84		71.38	6.48		TOB
28160	554323.3	696380.6	E	70.29		70.84	6.60		CL
28161	554330.0	696364.8	E	70.40		70.93	6.36		CL
28162	554331.6	696348.9	E	70.37		71.00	7.56		CL
28163	554332.1	696339.7	E	70.48		71.05	6.84		CL
28164	554339.3	696330.3	E	70.45		71.11	7.92		CL
28165	554349.1	696321.3	E	70.42		71.02	7.20		CL
28166	554360.0	696312.1	E	70.47		70.99	6.24		CL
28167	554371.1	696294.8	E	70.49		71.02	6.36		CL
28168	554364.3	696290.0	E	70.60		71.17	6.84		TOB
28169	554357.8	696302.7	E	70.80		71.31	6.12		TOB
28170	554342.0	696316.3	E	70.88		71.57	8.28		TOB
28171	554329.5	696330.4	E	71.10		71.76	7.92		TOB
28172	554324.8	696339.1	E	71.13		71.78	7.80		TOB
28173	554326.1	696354.1	E	70.84		71.40	6.72		TOB
28174	554320.2	696368.1	E	70.80		71.47	8.04		TOB
28175	554316.9	696379.4	E	70.45		71.03	6.96		TOB
28176	554338.8	696386.5	E	71.45		72.21	9.12		R
28177	554348.9	696361.9	E	71.41		71.95	6.48		R
28178	554356.3	696339.9	E	71.63		72.17	6.48		R
28179	554366.8	696340.3	E	72.44		73.00	6.72		R
28180	554368.1	696326.1	E	71.43		72.10	8.04		R
28181	554344.3	696293.7	E	70.73		71.23	6.00		R
28182	554326.8	696316.9	E	71.05		71.73	8.16		R
28183	554317.9	696343.8	E	70.91		71.68	9.24		R
28184	554340.7	696307.9	E	70.95		71.49	6.48		R
28185	554383.8	696235.1	E	70.39		71.13	8.88		R
28186	554400.5	696196.9	E	70.73		71.30	6.84		R
28187	554349.8	696095.4	E	69.96		70.50	6.48		R
28188	554361.9	696075.2	E	70.04		70.58	6.48		R
28304	554466.7	696270.0	71.30	A		72.30		11.99	TOP
28306	554459.0	696316.0	70.90	A		72.05		13.78	TOP
28307	554437.8	696359.9	71.18	A		72.75		18.80	TOP
28309	554412.7	696400.6	72.09	A		73.19		13.21	TOP
28310	554381.5	696437.6	72.18	A		73.71		18.31	TOP
28311	554350.6	696476.3	72.53	A		74.00		17.65	TOP
28312	554321.7	696504.9	72.08	A		72.71		16"± *	TOP
28333	554338.8	696515.2	73.57	A		74.22		17"± *	TOP
28334	554364.3	696489.9	72.68	A		74.64		23.52	TOP
28335	554396.4	696450.0	72.71	A		74.97		27.13	TOP
28338	554426.7	696411.0	72.28	A		73.70		16.99	TOP
28340	554452.1	696366.8	71.55	A		73.60		24.66	TOP
28341	554471.9	696320.5	70.78	A		72.45		20.05	TOP
28342	554481.4	696271.6	70.98	A		72.70		20.64	TOP
28344	554483.3	696223.7	71.22	A		75.84		55.45	TOP
28349	554330.9	696482.6	72.89	74.10	14.52	74.71	7.32	21.84	R
28350	554337.9	696476.8	73.63	74.69	12.72	75.17	5.76	18.48	R
28351	554366.5	696444.5	73.41	74.43	12.24	74.99	6.72	18.96	R
28352	554396.8	696408.6	73.62	74.69	12.84	75.07	4.56	17.40	R
28353	554416.3	696386.0	73.14	74.19	12.60	74.55	4.32	16.92	R
28354	554437.9	696336.7	72.15	73.16	12.12	73.58	5.04	17.16	R
28355	554456.3	696286.0	71.74	72.77	12.36	73.14	4.44	16.80	R
28356	554458.4	696260.1	70.96	72.02	12.72	72.42	4.80	17.52	R
28359	554439.5	696256.9	70.47	71.57	13.20	72.20	7.56	20.76	R
28360	554421.2	696262.3	71.11	72.13	12.24	72.66	6.36	18.60	R
28361	554396.9	696272.8	72.19	73.30	13.32	73.68	4.56	17.88	R
28362	554380.1	696312.8	72.50	73.55	12.60	73.91	4.32	16.92	R
28363	554364.7	696351.7	72.36	73.40	12.48	73.86	5.52	18.00	R
28364	554342.6	696405.8	72.59	73.60	12.12	74.14	6.48	18.60	R
28365	554318.1	696447.1	72.80	73.83	12.36	74.19	4.32	16.68	R
28366	554298.4	696489.4	73.97	75.10	13.51	75.53	5.26	18.77	R
28367	554307.8	696510.4	74.88	75.97	13.06	76.34	4.50	17.56	R
28368	554311.1	696499.7	74.06	75.11	12.60	75.58	5.63	18.23	R
28369	554323.9	696482.8	73.79	74.83	12.48	75.22	4.68	17.16	R
28370	554327.6	696464.5	73.54	74.61	12.84	75.15	6.48	19.32	R
28371	554362.4	696419.1	72.93	74.22	15.48	74.83	7.32	22.80	R
28372	554391.2	696377.1	72.57	73.62	12.60	74.24	7.44	20.04	R
28373	554413.7	696325.8	72.14	73.17	12.36	73.74	6.84	19.20	R
28380	554458.9	696286.5	70.94	72.52	18.96	73.26	8.88	27.84	BKPL
28381	554441.6	696339.2	71.11	72.67	18.72	73.47	9.60	28.32	BKPL
28382	554418.7	696387.5	72.28	73.69	16.92	74.45	9.12	26.04	BKPL
28383	554381.2	696431.1	72.49	74.09	19.20	74.79	8.40	27.60	BKPL
28384	554348.1	696470.5	72.78	74.17	16.68	74.90	8.76	25.44	BKPL
28385	554316.3	696503.6	72.22	73.78	18.72	74.45	8.04	26.76	BKPL
28386	554337.4	696525.3	74.26	75.71	17.40	76.41	8.36	25.76	BKPL
28387	554372.3	696491.1	73.31	74.91	19.20	75.87	11.57	30.77	BKPL

* FIELD VERIFIED BY ROUX ASSOCIATES, INC. ON 9/19/08

TABLE REMARKS

A	IN RIP RAP– SUBGRADE AND FINISH GRADE ONLY
B	IN GRAVEL ROAD– SUBGRADE AND FINISH GRADE ONLY
C	CULVERT– ONLY SUBGRADE AND FINISH GRADE
D	REMEDIATION IN PROGRESS
E	UNABLE TO COLLECT
F	ON CLAY BERM– NO SUBGRADE
G	BOX CULVERT SUBGRADE ONLY
H	TOP OF BANK OF UTILITY CORRIDOR– SUBGRADE ONLY
I	CREATED WETLANDS STREAM– SEE COVER GRADE
J	FINISH GRADE ON CONCRETE WEIR
K	NO "TEWKSBURY" LOAM APPLIED
L	NOT COLLECTED
M	OUTSIDE LIMIT OF CLAY GRADE
N	UNDER WATER
P	AT TRANSITION– NO COVER GRADE
Q	IN GRAVEL ROAD– SEE ADJACENT SUBGRADE
R	IN GRAVEL ROAD– SEE ADJACENT FINISH GRADE
S	IN GRAVEL ROAD AT UTILITY CORRIDOR– NO SUBGRADE

POINT DESCRIPTORS

A	AERO	HYD	HYDRANT
BEOP	BACK EDGE OF PLANTER	K	KOSTER
BLDG	BUILDING	LIM	LIMIT
BNDY	BOUNDARY	MW	MONITOR WELL
BR	BREAK IN SLOPE	P	PEBCO (NOW TRANSCOMM)
C##	CONTOUR INTERVAL	PLNTR	PLANTER
CG	COVER GRADE	PC	POINT OF CURVATURE
CHNL	CHANNEL	POC	POINT ON CURVE
CL	CENTERLINE	PT	POINT OF TANGENCY
CLF	CHAIN LINK FENCE	PX	PX REALTY
CONT	CONTOURS	R	RANDOM
COR	CORNER	RD	ROAD
CUL	CULVERT	REM	REMEDIATION
CURBa	ASPHALT CURB	RPRP	RIPRAP
CURBg	GRANITE CURB	SG	SUBGRADE
D	DAGATA	SL	SLOPE
DTCH	DITCH	SWL	SWALE
E.	EDGE OF	TOB	TOP OF BANK
E.C.	EDGE OF CONCRETE	TOE	TOE OF SLOPE
E.P.	EDGE OF PAVEMENT	TOP	TOP OF SLOPE
EX	EXCAVATION	TRAN	TRANSITION ZONE
EZ	EXCLUSION ZONE	UC	UTILITY CORRIDOR
FAB	FABRIC	UCN	NORTH UTILITY CORRIDOR
FG	FINISH GRADE	UP	UTILITY POLE
G	GENERAL POINT	WG	WATERGATE
GUY	GUY WIRE	RRBD	RAILROAD BED

REV.	DATE	DESCRIPTION		DR	CK
I	9/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS	JF	MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

PREPARED FOR:

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

PREPARED BY:

MERIDIAN Land Services, Inc.

ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

DESIGNED BY:

Golder Associates
Manchester, New Hampshire

400 Commercial Street
Manchester, N.H. USA 03101
603-668-0880 • FAX 603-668-1199

PROJECT RECORD (LOT 5-1-1 (WETLANDS 1C))

RECORD POINTS CHART

INDUSTRI-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS

AUGUST 8, 2000

SCALE: 1" = NONE

DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 29002714.dwg
DO NOT SCALE DRAWING

C-37
SHEET NO.

PROJECT: 2900.00
SHEET 4 OF 6

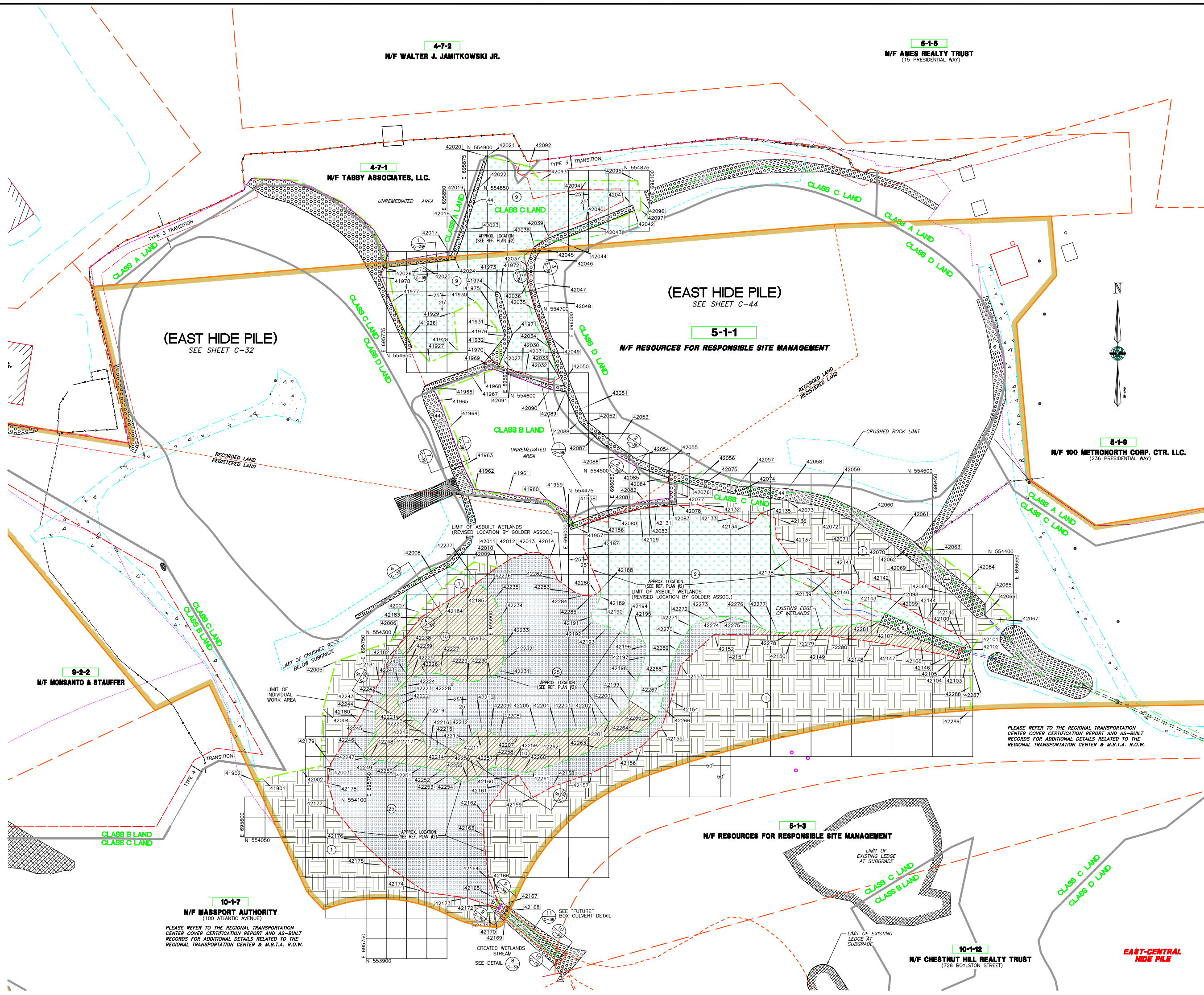
COVER TYPE POINT CHART

NUMBER	NORTHING*	EASTING*
41901	554122.5	695622.0
41902	554120.2	695611.9
41926	554666.9	695801.8
41927	554637.9	695828.6
41928	554652.6	695862.8
41929	554699.9	695858.5
41930	554712.6	695885.5
41931	554680.4	695911.1
41932	554659.9	695913.5
41957	554433.3	696009.9
41958	554439.0	696006.1
41959	554453.0	695998.5
41960	554467.3	695974.8
41961	554474.9	695925.4
41962	554480.6	695884.1
41963	554509.8	695869.9
41964	554556.8	695852.9
41965	554590.7	695840.6
41966	554605.8	695832.4
41967	554622.3	695879.6
41968	554627.7	695896.1
41969	554629.2	695907.6
41970	554632.9	695913.6
41971	554671.9	695930.9
41972	554723.2	695915.3
41973	554726.1	695911.2
41974	554723.8	695909.5
41975	554691.5	695915.2
41976	554670.5	695921.7
41977	554712.2	695780.6
41978	554743.2	695766.5
42002	554133.3	695670.8
42003	554138.0	695693.3
42004	554208.4	695696.7
42005	554267.5	695712.6
42006	554292.7	695780.5
42007	554328.7	695815.2
42008	554358.2	695843.8
42009	554390.8	695883.2
42010	554383.9	695912.2
42011	554394.5	695928.6
42012	554402.6	695951.7
42013	554402.1	695964.2
42014	554393.9	695976.5
42017	554770.0	695854.9
42018	554802.3	695868.0
42019	554832.3	695876.6
42020	554893.1	695897.5
42021	554893.4	695900.4
42022	554852.7	695888.9
42023	554802.5	695873.2
42024	554765.3	695860.2
42025	554759.6	695816.5
42026	554755.0	695770.9
42027	554628.5	695930.5
42030	554623.1	695943.6
42031	554620.1	695946.7
42032	554610.7	695975.4
42033	554609.1	695995.0
42034	554655.7	695977.0
42035	554702.8	695958.7
42036	554735.9	695949.3
42037	554758.0	695948.4
42038	554781.1	695957.8
42039	554791.8	695975.9
42040	554809.7	696021.5
42041	554832.4	696079.4
42042	554825.8	696081.8
42043	554806.1	696034.1
42044	554788.6	695987.3
42045	554778.1	695966.4
42046	554766.1	695959.2
42047	554735.8	695957.6
42048	554714.0	695963.0
42049	554667.1	695980.3
42050	554620.7	695998.9
42051	554580.0	696015.1
42052	554564.4	696023.1
42053	554536.5	696058.4
42054	554519.2	696082.6
42055	554506.5	696114.5
42056	554493.6	696160.6
42057	554484.9	696207.7
42058	554481.4	696271.5
42059	554472.0	696320.5
42060	554452.1	696366.7
42061	554426.6	696410.9
42062	554415.6	696428.0
42063	554405.0	696439.3
42064	554364.2	696489.8
42065	554338.7	696515.2
42066	554325.5	696514.4
42067	554321.6	696504.9
42068	554350.7	696476.3
42069	554381.5	696437.6
42070	554412.7	696400.5
42071	554437.8	696359.9
42072	554459.0	696316.0
42073	554466.7	696269.9
42074	554475.0	696205.8
42075	554484.2	696163.4
42076	554490.9	696134.4
42077	554477.1	696132.0
42078	554462.2	696134.3
42079	554458.5	696098.7
42080	554446.7	696048.6
42081	554454.0	696046.0
42082	554466.0	696093.8
42083	554469.8	696126.8
42084	554494.9	696123.5
42085	554508.8	696083.5
42086	554521.2	696062.0
42087	554545.8	696032.1
42088	554564.2	696013.2
42089	554601.3	695996.9
42090	554604.5	695976.9
42091	554623.0	695928.6
42092	554880.3	695951.2
42093	554863.0	695964.9
42094	554862.7	696022.6
42095	554862.3	696085.3
42096	554837.6	696089.6
42097	554826.4	696088.9
42098	554327.3	696392.0
42099	554302.7	696443.4
42100	554284.3	696488.9
42101	554291.2	696493.7
42102	554282.3	696498.5
42103	554268.4	696492.5
42104	554271.1	696480.9
42105	554276.3	696482.3
42106	554293.9	696435.1
42107	554313.6	696384.8
42129	554456.1	696088.6
42130	554458.7	696108.7
42132	554461.6	696160.4
42133	554446.0	696205.1
42134	554438.0	696226.2
42135	554451.4	696237.7
42136	554444.8	696256.1
42137	554420.5	696256.7
42138	554395.4	696274.7
42139	554375.4	696324.8
42140	554361.4	696355.8
42141	554367.0	696361.3
42142	554350.1	696398.7

COVER TYPE POINT CHART

NUMBER	NORTHING*	EASTING*
42143	554345.1	696398.2
42144	554320.1	696442.8
42145	554298.1	696486.0
42146	554274.8	696470.5
42147	554283.5	696424.4
42148	554291.9	696376.0
42149	554299.2	696322.9
42150	554299.5	696277.0
42151	554300.7	696225.6
42152	554301.2	696180.4
42153	554263.4	696138.9
42154	554218.9	696126.7
42155	554185.9	696115.2
42156	554162.5	696090.9
42157	554129.5	696028.8
42158	554112.4	695979.8
42159	554099.3	695956.4
42160	554126.8	695938.7
42161	554116.5	695922.7
42162	554079.4	695894.7
42163	554053.0	695895.1
42164	553997.4	695902.2
42165	553973.2	695911.9
42166	553974.0	695915.8
42167	553967.3	695920.6
42168	553961.6	695928.8
42169	553945.9	695921.3
42170	553956.8	695908.8
42171	553964.4	695903.4
42172	553965.7	695903.9
42173	553975.0	695874.9
42174	553981.8	695824.0
42175	554015.0	695775.7
42176	554046.6	695741.9
42177	554082.4	695712.7
42178	554116.9	695702.4
42179	554141.0	695706.0
42180	554193.9	695739.5
42181	554241.7	695766.0
42182	554286.3	695789.7
42183	554322.2	695817.4
42184	554344.0	695853.5
42185	554362.0	695883.2
42186	554436.4	696019.0
42187	554406.4	696019.2
42188	554356.2	696040.1
42189	554347.9	696039.3
42190	554332.4	696031.9
42191	554323.1	696028.4
42192	554317.6	696031.1
42193	554310.3	696049.7
42194	554303.5	696068.6
42195	554291.7	696093.6
42196	554287.6	696095.9
42197	554273.2	696094.4
42198	554242.6	696084.7
42199	554219.2	696075.6
42200	554204.8	696065.9
42201	554194.2	696051.5
42202	554188.4	696035.8
42203	554183.3	696010.3
42204	554179.3	695986.2
42205	554176.3	695962.0
42207	554175.3	695938.1
42208	554175.9	695914.2
42209	554180.3	695903.6
42210	554184.1	695893.0
42211	554182.1	695886.9
42212	554176.4	695880.5
42213	554168.3	695872.0
42214	554161.0	695853.0
42215	554158.8	695838.9
42216	554161.4	695828.9
42217	554168.1	695822.1
42218	554181.6	695819.8
42219	554189.4	695817.8
42220	554194.9	695811.2
42221	554203.8	695798.6
42222	554214.0	695789.8
42223	554223.8	695788.1
42224	554235.9	695793.8
42225	554245.1	695804.7
42226	554253.0	695823.7
42227	554252.0	695841.2
42228	554246.1	695856.3
42229	554242.2	695875.3
42230	554248.9	695903.9
42231	554255.9	695914.3
42232	554268.0	695919.3
42233	554287.6	695920.2
42234	554323.2	695916.7
42235	554345.0	695908.2
42236	554356.4	695898.4
42237	554365.0	695887.1
42238	554272.5	695797.6
42239	554260.2	695800.7
42240	554252.0	695799.6
42241	554239.1	695790.2
42242	554225.9	695772.5
42243	554216.7	695765.2
42244	554204.4	695761.5
42245	554177.6	695762.1
42246	554155.5	695746.5
42247	554148.8	695748.3
42248	554145.6	695753.4
42249	554145.4	695765.3
42250	554141.8	695791.8
42251	554137.2	695818.9
42252	554132.8	695842.8
42253	554127.8	695853.0
42254	554119.8	695865.3
42255	554119.4	695876.8
42256	554125.0	695887.6
42257	554132.0	695897.2
42258	554136.6	695908.9
42259	554134.8	695925.2
42260	554130.4	695942.8
42261	554132.6	695957.7
42262	554142.7	695989.6
42263	554160.3	696038.5
42264	554180.5	696087.8
42265	554198.2	696108.2
42266	554212.5	696114.3
42267	554240.6	696120.1
42268	554260.6	696125.9
42269	554281.8	696134.3
42270	554299.0	696143.6
42271	554310.7	696152.9
42272	554319.9	696168.0
42273	554323.2	696183.1
42274	554322.5	696203.4
42275	554317.5	696219.5
42276	554307.7	696241.4
42277	554303.8	696258.3
42278	554303.8	696275.7
42279	554308.5	696314.0
42280	554312.7	696346.9
42281	554317.6	696386.2
42282	554368.6	695986.6
42283	554352.7	696008.8
42284	554349.2	696018.6
42285	554348.6	696028.0
42286	554351.3	696034.7
42287	554274.0	696495.1
42288	554236.1	696497.2
42289	554207.1	696497.1

* HORIZONTAL POSITION REPRESENTED BY DATA LISTED ABOVE WAS DEVELOPED FROM VARIOUS SOURCES. (SEE NOTES 3 & 4 ON SHEET 1)



LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY
- ABUTTING PROPERTY LINES
- ASPHALT, CONCRETE, GRANITE CURB
- TRANSITION ZONE
- LAND CLASS LINE
- N 551,000 GRID LINE
- IPLEX SITE LIMIT LINE
- EDGE OF EXISTING PAVEMENT
- LIMIT OF GEOTEXTILE
- A.T.&T. FIBER OPTIC CABLE
- EXTRUSION SEAM TIE-IN
- TOE OF SLOPE
- TOP OF SLOPE
- LIMIT CHAIN LINK FENCE
- EDGE OF ASBUILT GRAVEL ROAD
- BACK EDGE OF PLANTER
- EDGE OF PROPOSED PAVEMENT
- EXISTING EASEMENT
- ASBUILT CULVERT
- LIMIT OF TREE LINE
- EXISTING CONCRETE STRUCTURE
- EDGE OF WETLANDS
- ASBUILT FINISH GRADE CONTOUR 5' INTERVAL
- ASBUILT FINISH GRADE CONTOUR 1' INTERVAL
- OHW OVERHEAD WIRES
- UGG UNDERGROUND GAS LINE
- LIMITS OF EXISTING EASEMENTS
- AREA OF LEDGE AT SUBGRADE
- UNREMEDIATED AREA
- 33 ASBUILT COVER TYPE
- TEST PIT
- MW MONITOR WELL
- HYDRANT
- WV GATE VALVE
- CATCH BASIN (SQUARE)
- CATCH BASIN (ROUND)
- D DRAIN MANHOLE
- S SEWER MANHOLE
- ● UTILITY POLE
- GUY WIRE
- +14000 ASBUILT POINT NO. & LOCATION
- GAS METER
- GAS SHUT OFF
- WATER SHUT OFF
- WATER CONTROL BOX
- SIGN
- ● BOLLARD
- T TELEPHONE MANHOLE
- 99999 POINT MARKER (SEE POINTS CHART)
- B BORING LOCATION
- ● MICRO WELL LOCATION
- P PIEZOMETER LOCATION
- SS SOIL SAMPLE LOCATION
- G STAFF GUAGE LOCATION
- T TENSIOMETER LOCATION
- UID LOCATION
- W MONITORING WELL LOCATION

- 1 ABOVE GRADE PERMEABLE COVER
- 6 DRAINAGE SWALE (GRAVEL/COBBLE LINED)
- 9 ABOVE GRADE PERMEABLE COVER (WETLANDS REMEDIATION) (APPROX. LOCATION)
- 10 ABOVE GRADE PERMEABLE COVER (WETLANDS SEDIMENT DREDGE AND CAP) {FOR EXISTING WETLANDS} (APPROX. LOCATION)
- 25 ABOVE GRADE PERMEABLE COVER (ENHANCED WETLANDS) {FOR MITIGATED WETLANDS} (APPROX. LOCATION)
- 44 D_{50} – 6" RIPRAP

X / C-XX — DETAIL/CROSS SECTION DESIGNATION; SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

COVER TYPES (ENGINEERED)

AREA	ORIGINAL CONDITION	COVER TYPE
1	VARIES	ABOVE GRADE PERMEABLE COVER
6	DRAINAGE SWALE	GRAVEL/COBBLE LINED
9	WETLANDS	ABOVE GRADE PERMEABLE COVER (WETLANDS REMEDIATION)
10	WETLANDS	DREDGE SEDIMENT, PLACE PERMEABLE COVER (WETLANDS REMEDIATION)
25	VARIES	SEE NOTE 4 (SHEET 11-3D) (ON REFERENCE PLAN 2)
44	VARIES	D_{50} – 6" RIPRAP

COVER TYPES (EQUIVALENT)

AREA	ORIGINAL CONDITION	EQUIVALENT COVER TYPE
4	PAVED	EQUIVALENT COVER
5	BUILDING	EQUIVALENT COVER
8	BEDROCK DRAINAGE SWALE	BLAST/EXCAVATE CHANNEL EQUIVALENT COVER
21	BEDROCK OUTCROP	GRUB & CLEAN EQUIVALENT COVER
30	STACK	EQUIVALENT COVER

RESTRICTED AREAS BY CLASSES OF LAND

CLASS OF LAND	DESCRIPTION
A	MAY CONTAIN CONTAMINATED GROUNDWATER
B	MAY CONTAIN CONTAMINATED GROUNDWATER, AND MAY CONTAIN CONTAMINATED SOILS. NO COVER WAS REQUIRED WITHIN CLASS B.
C	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER.
D	MAY CONTAIN CONTAMINATED GROUNDWATER, AND CONTAINS CONTAMINATED SOIL AND COVER. CLASS D ALSO CONTAINS FOUR ANIMAL HIDE PILES.

GRAPHIC SCALE
50' 25' 0 50' 100' 150'

REV.	DATE	DESCRIPTION		DR	CK
I	9/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS	JF	MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

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Environmental Consulting & Management

PREPARED BY:
MERIDIAN Land Services, Inc.
ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

DESIGNED BY:
Golder Associates
Manchester, New Hampshire
400 Commercial Street
Manchester, N.H. USA 03101
603-668-0880 • FAX 603-668-1199

PROJECT RECORD (LOT 5-1-1 (WETLANDS 1C))

COVER TYPES AND TRANSITIONS

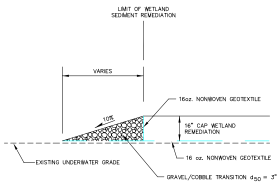
INDUSTRI-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS

SCALE: 1" = 50'
AUGUST 8, 2000

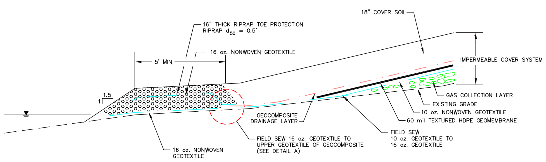
DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 290027115.dwg
DO NOT SCALE DRAWING

C-38
SHEET NO.
PROJECT: 2900.00
SHEET 5 OF 6

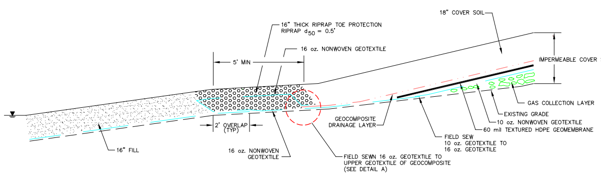
Sep 29, 2008 – 10:04am dbh Land Desktop 2004 – LDT4
H:\mis\02900-0-AB\2900.27\AS-BUILTS\0-PARCEL-1\



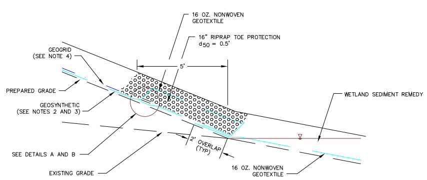
1 / C-39 **TYPICAL TYPE C TRANSITION**
NOT TO SCALE



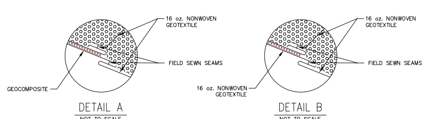
2 / C-39 **TYPICAL NON-REMEDIATED WETLAND TIE-IN DETAIL**
NOT TO SCALE



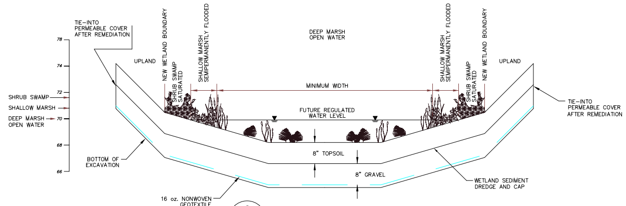
3 / C-39 **TYPICAL REMEDIATED WETLAND TIE-IN DETAIL**
NOT TO SCALE



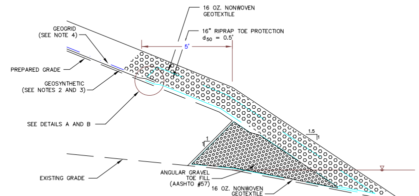
4 / C-39 **TYPICAL WETLAND TIE-IN DETAIL**
NOT TO SCALE



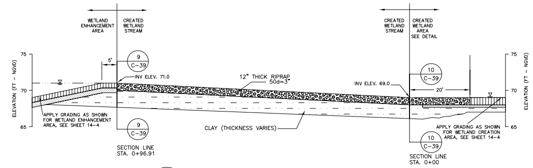
5 / C-39 **OVERLAP TIE-IN DETAIL**
NOT TO SCALE



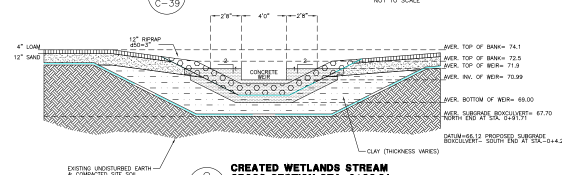
6 / C-39 **TYPICAL WETLAND CROSS SECTION**
NOT TO SCALE



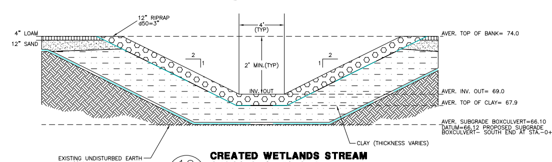
7 / C-39 **TYPICAL WETLAND TIE-IN DETAIL**
NOT TO SCALE



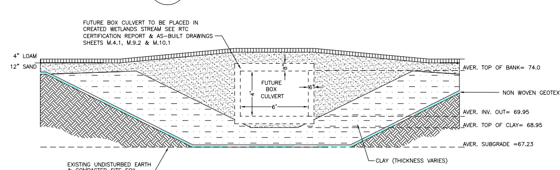
8 / C-39 **CREATED WETLANDS STREAM PROFILE VIEW**
NOT TO SCALE



9 / C-39 **CREATED WETLANDS STREAM CROSS SECTION STA. 0+96.91**
NOT TO SCALE



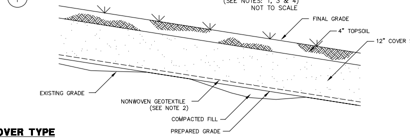
10 / C-39 **CREATED WETLANDS STREAM CROSS SECTION STA. 0+00**
NOT TO SCALE



11 / C-39 **TYPICAL CREATED WETLANDS STREAM**
(WITH FUTURE BOX CULVERT)
NOT TO SCALE

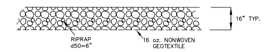
COVER TYPE

1 **ABOVE GRADE ENGINEERED PERMEABLE COVER**
(SEE NOTES: 1, 3 & 4)
NOT TO SCALE



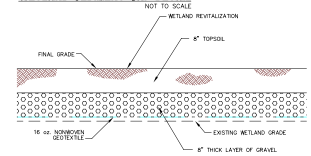
COVER TYPE

6 **ENGINEERED DRAINAGE SWALE/COBBLE LINED**
NOT TO SCALE



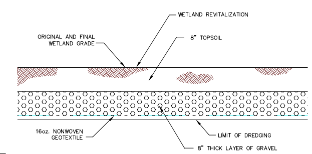
COVER TYPE

9 **WETLAND SEDIMENT CAP DETAIL**
NOT TO SCALE



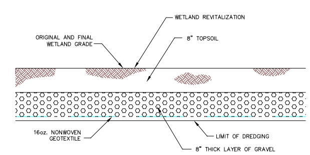
COVER TYPE

10 **WETLAND SEDIMENT DREDGE AND CAP DETAIL (EXISTING WETLANDS)**
NOT TO SCALE



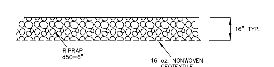
COVER TYPE

25 **WETLAND SEDIMENT DREDGE AND CAP DETAIL (MITIGATION WETLANDS)**
NOT TO SCALE



COVER TYPE

44 **ENGINEERED RIPRAP TOE PROTECTION**
NOT TO SCALE



LEGEND

X / C-39 — DETAIL/CROSS SECTION DESIGNATION
— SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

NOTES

1.) SEE SPECIFICATIONS FOR DETAILS AND MATERIALS USED.

2.) FOR SLOPES FLATTER THAN 25% A 16oz. NONWOVEN GEOTEXTILE WAS INSTALLED ON HIDE PILES AND A 6oz. NONWOVEN GEOTEXTILE WAS INSTALLED ELSEWHERE.

3.) FOR SLOPES 25% OR STEEPER, A GEOSYNTHETIC DRAIN WAS USED AS FOLLOWS:

a. ON HIDE PILES, A GEOCOMPOSITE DRAIN WAS EXTENDED FROM THE TOE OF SLOPE A DISTANCE EQUAL TO A 10 FOOT CHANGE IN ELEVATION. A 16oz. NONWOVEN GEOTEXTILE WAS USED ELSEWHERE AND FIELD SEWN WITH THE GEOCOMPOSITE.

b. IN AREAS OTHER THAN HIDE PILES, A 16oz. NONWOVEN GEOTEXTILE WAS USED THROUGHOUT.

4.) FOR SLOPES STEEPER THAN 33%, A GEOGRID WAS PLACED DIRECTLY ABOVE THE GEOSYNTHETIC AND EXTENDED A DISTANCE OF 10 FEET BEYOND THE CREST OF THE SLOPE. FOR SLOPES 50% OR STEEPER A RIPRAP FACING WAS PLACED WITHOUT GEOGRID.

5.) VERTICAL EXAGGERATION OF GEOSYNTHETICS SCALE FOR VISUAL PURPOSES ONLY.

6.) PLEASE REFER TO THE REGIONAL TRANSPORTATION CENTER COVER CERTIFICATION REPORT AND AS-BUILT RECORDS FOR ADDITIONAL DETAILS RELATED TO THE REGIONAL TRANSPORTATION CENTER.

REV.	DATE	DESCRIPTION		DR	CK
I	9/30/08	FINAL SUBMISSION	TC	DBH	MDP
H	2/8/08	EPA COMMENTS OF 1/22/08	TC	DBH	MDP
G	9/28/07	EPA & DEP COMMENTS OF 8/29/07	JF	CAC	MDP
F	5/1/07	EPA & DEP COMMENTS OF 8/3/06	JF	CAC	MDP
E	9/21/05	EPA & DEP COMMENTS OF 7/12/04	KL	MDP	JGK
D	6/11/04	EPA & DEP COMMENTS OF 10/30/03	JF	MDP	JGK
C	10/16/03	DEP REVISIONS		MDP	JGK
B	8/12/01	EPA REVISIONS	JF	MDP	JGK
A	8/8/00	ISSUE FOR REVIEW		MDP	JGK

PROFESSIONAL LAND SURVEYOR

PROFESSIONAL ENGINEER

PREPARED FOR:
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

PREPARED BY:
MERIDIAN Land Services, Inc.
ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

DESIGNED BY:
Golder Associates
Manchester, New Hampshire
400 Commercial Street
Manchester, N.H. USA 03101
603-668-0880 • FAX 603-668-1199

PROJECT RECORD LOT (5-1-1 (WETLANDS 1C))

DETAILS AND TRANSITIONS

INDUSTRI-PLEX SITE REMEDIAL TRUST
WOBURN, MASSACHUSETTS

SCALE: 1" = NONE
AUGUST 8, 2000

DESIGNED BY: MDP
DRAFTED BY: MDP
CHECKED BY: JGK
FILE: 29002711б.dwg
DO NOT SCALE DRAWING

C-39
SHEET NO.
PROJECT: 2900.00
SHEET 6 OF 6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
ONE CONGRESS STREET SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

September 30, 2008

Resources for Responsible Site Management, Inc.
(property owner of Woburn, MA, Tax Map 5-1-1 (Western Barrel Commerce Way Extension))
c/o Cynthia Brooks
44 Shattuck Road
Watertown, MA 02472

Re: Industri-plex Superfund Site, Operable Unit 1: Final Property-Specific Cover Certification Report for Woburn, MA, Tax Map 5-1-1 (Western Barrel of Commerce Way Extension).

Dear Resources for Responsible Site Management, Inc.:

On April 27, 1998, a final Anderson Regional Transportation Center (RTC) Cover Certification Report (CCR) was established for the following properties at the Industri-plex Superfund Site:

- Tax Map 10-1-7, 100 Atlantic Avenue;
- Tax Map 9-2-2, New Boston Street; and
- Tax Map 5-1-1, Western Barrel of Commerce Way Extension.

A copy of the final RTC CCR can be found at the EPA's website for the Industri-plex Superfund Site at http://www.epa.gov/region1/superfund/sites/industriplex/277532.pdf. For your information, a cover modification was established for the RTC (including building, track alignment, lighting and finished pavement construction) in July 2001, and can be found at http://www.epa.gov/region1/superfund/sites/industriplex/284095.pdf.

The final RTC CCR includes your property located at Woburn, MA, Tax Map 5-1-1 (Western Barrel of Commerce Way Extension), and documents the completion of a portion of the Remedial Action for soil, sediments, and air at the Industri-Plex Superfund Site, Operable Unit 1, Woburn, MA, in accordance with the October 1, 1996, approved, Regional Transportation Center Alternative Cover Design. The Remedial Action implemented on your property was required by the Consent Decree entered on April 24, 1989 by the United States District Court for the District of Massachusetts in the matter styled United States v. Stauffer Chemical Company et al., Civil Action No. 89-0195-MC, and Commonwealth of Massachusetts v. Stauffer Chemical Company et al., Civil Action No. 89-0196-MC.

The final RTC CCR contains detailed full-size Record Drawings illustrating the Remedial Action implemented on your property, such as the location of Engineered and/or Equivalent Covers which serve as barriers preventing contact to the underlying Contaminated Soils. The Record

Drawings also illustrate the location of various land classifications designated on your property (i.e. Land Class A, B, C and/or D), which represent various conditions and restrictions. The details contained in the CCR, particularly the Record Drawings, will be useful towards ensuring the long protectiveness of the remedy and compliance with institutional controls (i.e. Grant of Environmental Restriction).

If you elect to alter the remedial action on your property (e.g. Engineered or Equivalent Covers), then you will be required to prepare As Built Records. The As Built Records are engineering drawings and other records depicting the location and details of remedial action alterations, and Clean Corridors, as constructed on the property. EPA expects the As Built Records to include engineering drawings which are similar in detail and quality as the Record Drawings provided in the final RTC CCR.

The next steps in the superfund process for this property will be the inauguration and recording of the Grant of Environmental Restrictions (Grant). A package will be sent to you regarding the inauguration requirements for your property.

If you should have any questions regarding this letter, please contact me at (617) 918-1323.

Sincerely,

Joseph F. LeMay, P.E.
Remedial Project Manager
Office Site Remediation and Restoration

cc: Bob Cianciarulo, EPA (letter)
David Peterson, EPA (letter)
Jennifer McWeeney, MassDEP
Andy Cohen, MassDEP (letter)
Tim Cosgrave, ISRT Coordinator (letter)
Carol Dickerson, SMC (letter)
Randy Cooper, Monsanto (letter)
Marc Weinreich, RRSM (letter)
Neil Thurber, M&E (letter)